WorldWise resource pack

Making geographical connections

WorldWise Week: 20-24 June 2016

WorldWise Week 2016: Making geographical connections

This pack of resources provide activities for students from primary to post-16 around the theme 'Making Geographical Connections', to consider how we are all surrounded by geographically based connections as well as disconnections; whether they be via transport and travel or technology, or even due to flooding.

Resources:

How do we connect? (Early years and primary, pp. 3–5)
These activities for early years and primary pupils explore what making connections means and how people connect with each other.

Mapping connections (Cross-curricular, pp. 6–7)
These activities use a range of maps to explore how the world is connected on a global and local scale and connections with oceans and seas.

Connecting with the future (Cross-curricular, pp. 8–9)
These activities consider ways we currently connect with others and how we are likely to connect in the future.

Transport and travel connections (Cross-curricular, pp. 10–12)
This resource looks at how transport and travel enables us to make connections, and suggests ways of getting out of the classroom.

Wet, Wet, Wet – Flooding connections (Secondary, pp. 13–18)
These activities investigate how flooding can result from a combination of connected factors.

How do students with special educational needs connect with the world? (Cross-curricular, pp. 19–20)
This resource focuses on connecting SEN students with the outside world, and can be adapted for both primary and secondary groups.

How can you use this year's WorldWise Week resource pack?
These resources have been written for young people of all ages to appreciate the value of school geography. They provide an understanding of the connections that exist between real life problems and issues, processes and landscapes. They provide the opportunity to reflect on and clarify their own views, ideas, values, attitudes and experiences. The pack is based around the GA's Presidential theme for 2016.

What is WorldWise Week?
The Geographical Association's Worldwise Week (WWW), is one of a range of young people oriented activities that aims to promote engaging geography within schools and colleges. See http://worldwise.geography.org.uk for full details of the Worldwise activities, which now include the *Local Quiz*, the *Online Quizzes*, the *My Places* area, and the *Photography Competition.*

Where can WorldWise Week take you?
We hope that examples of students' work showing their engagement with this year's WWW theme will be submitted to us here at the GA (please email details or provide relevant school, college or geography department website links to: rbuck@geography.org.uk). Entries or other feedback from the KS3-4 category can be used in support of your school's overall involvement in Worldwise, with a view to being invited to take part in the 2017 Worldwise Challenge weekend (this is a membership only opportunity). This event is a free-of-charge, residential weekend based around providing stimulating; up to date fieldwork activities for Y9-Y11 students and accompanying teachers that takes place at a Field Studies Council (FSC) centre during April each year.

How do we connect?

Early years and primary

Although we normally think of computers as the ones we use in our everyday lives to surf the web, write documents etc, small computers are also embedded into other things such as mobile phones, toys, microwaves and MP3 players. We use computers all the time, often without even knowing it! Computers help link the world in the form of networks. Networked computers allow users to share and exchange data that is stored in different locations. You may have heard of a local area network (LAN) or wide area network (WAN) which connects areas of various sizes. The Internet is a vast network of computers spanning the globe that allows users to access email, the World Wide Web and other applications.

Key questions:

- What does making connections mean?
- How do people connect with each other?

Activity one – Making connections between people

Pupils work in groups giving them a few minutes to write down as many ways that people connect with each other on one large sheet of paper. They will then try to sort them into groups, (possibly cutting up their words and sticking in groups) and then feed back to the rest of the class why they have sorted them the way they have.

- See if they sort them into technology, written ways, oral, visual, old/new.
- Establish as a class how there are many different ways to connect with each other and how times are changing very quickly. Create a mind map to show the class results.

Activity two – Compare the use of paper/computers for connecting with each other

Questions to consider:

- Does paper storage have limited potential compared to digital storage?
- How can you connect with each other using paper? (E.g. letters, fax, notes, writing books, performing plays, school newsletters, posters, flyers.)
- What are the limitations when using paper? (E.g. time, resources, storage, cost of postage etc.)
- What are the advantages of using computers to connect with others? (E.g. speed, contact groups of people at one time, images from all over the world instantly, see people you are talking to, keep up to date with world events)
- Are there any problems with using computers? (E.g. fraud, overuse of computers, losing the art of communication within families and friends.)
- How can we connect with each other using the computer? (E.g. Email, social media, Skype, Face time, play games, mobile phones, toys, MP3 players.

Create a poster to show how pupils in the class connect with other people, using photos of technology.

Activity three – Enquiry: Does everyone have equal access to the internet in the world?
This website gives great information about how there are still parts of the world that have very limited internet through an interactive map, based on internet addresses world-wide. Compare how the different continents vary: http://www.nationalgeographic.com/earthpulse/technology.html

Activity four – Using Google Maps to display a street map of the school area and generate a set of directions

- Will Google generate the same directions if *bus*, *walk*, or *bike* is selected instead of *drive*?
- Do you have to put in a street address or can you just type in the name of a place? Try this out by typing in a range of famous landmarks.
- Can Google see my house?

Pupils think of a reason to use Google maps, e.g:

- Get directions to go to a friend's house.
- Tell a friend who is coming to my birthday party how to get to my house.
- If I missed the school bus, I could tell someone how to drive to the school.
- If I was lost, I could find my way home.

https://maps.google.co.uk/

Activity five – Interview research
Interview some family members/members of staff, of different ages about the ways that they stay connected with people.

- Explain how connectivity has changed, is it for the better or not?
- Do different ages of people have different ideas?
- Perhaps have this as a homework activity?

Collect the stories into a series of podcasts/short videos/blogs. These could be put on the school website to show to the rest of the community. A very thought provoking short video of how massive technology is nowadays and a good discussion piece:
https://www.youtube.com/watch?v=yuKu6PZXCIY&feature=player_embedded

Activity six – The importance of time-zones when connecting across the world (KS2)
Key stage2 pupils can look into time zones and how they change.
Why is this important to us? Look at how we can connect with people all over the world and how sporting events/natural disasters are relayed across the world: http://www.worldtimeserver.com/

Activity seven – How we connected with the first people on the moon
We have more technology in our phone now than they had on a space craft.
How do they think people reacted to having men on the moon? Children imagine they are the first people on the moon – make an audio recording of what they think it was like. Give a commentary on the geographical views they see. Play them back to each other/in an assembly. Refer to this video:
https://www.youtube.com/watch?v=RMINSD7MmT4. Draw the journey they think the rocket would have made.

Is there life on Mars? Is this link a sign of things to come? How are we receiving the pictures?
http://www.bbc.co.uk/newsround/35797618

Activity eight – The power of connecting with important wildlife issues
How effective is the advert and getting the message across?
Can pupils make up their own advert (on similar geographical message to this one about palm oil: http://www.ran.org/palm_oil) such as saving the rainforests from too much deforestation, overfishing seas, the melting icecaps etc?

How will they get people to connect to the important issues?

Activity nine – Sign language/codes
Pupils can invent sign language or codes to describe a place in the local area they like/dislike. Draw a map without speaking to show the way to somewhere within school. Can the other pupils follow it?

Mapping connections

Cross-curricular

The National Curriculum makes it quite clear that all students should be competent in the geographical skills required to interpret a range of geographical information, including maps, globes aerial photographs and GIS. Teaching map work can be a mundane and boring task - for teachers and for students - but the wealth and range of maps and photos available today which reveal how the world is connected give no excuse for not making the exploration of the world and its connections engaging and exciting.

Activity one – Global Scale

Major Tim Peake is circling the globe at the moment in the International Space Station and has sent back a huge range of photos of different parts of the globe. Some are outlines of places that we already know and can be matched to atlases or road maps, for example this image of London clearly shows the M25 and other major route ways around the capital.
http://i.dailymail.co.uk/i/pix/2016/01/31/11/30C1687F00000578-0-image-a-22_1454239297106.jpg

Others show parts of the earth from different angles like this one showing parts of northern Europe and south east England. The curvature of the earth and the atmosphere are clearly seen, but also the points of light that represent major towns and cities and the links between them.
http://i.dailymail.co.uk/i/pix/2016/01/31/11/30C1688700000578-0-image-a-21_1454239291443.jpg

This photo also gives the opportunity to discuss how difficult it is to represent a spherical globe on a flat surface, with a follow up about the challenges of all the different map projections. This site shows the three main ways for students to research: http://www.kidsgeo.com/geography-for-kids/0031-map-projection-types.php and this one explains it quite well for the teacher: https://futuremaps.com/information/map-projections

Of course the amazing *Worldmapper* http://www.worldmapper.org gives you the opportunity to find maps and cartograms which represent almost any connection you might want to explore. This one maps human poverty http://www.worldmapper.org/display.php?selected=174 and could link nicely to a unit of work on the impact of campaigns such as the recent 'Sport Aid' event. Can these fundraising frenzies really make a difference?

You can also compare the amount of money spent on military defense:
herehttp://www.viewsoftheworld.net/?p=3363 with the number of deaths from wars here:
http://www.worldmapper.org/display_extra.php?selected=484

Activity two – Oceans and seas
The National Curriculum also asks us to teach about oceans, their distribution and characteristics, such as connections between the oceans through their currents and topography. Maps such as these: https://www.gislounge.com/wp-content/uploads/2013/10/ocean-map.jpg provides an excellent basis for teaching plate tectonics at secondary level. Remember, it was investigating sea floor spreading in the mid-20th century that began the whole research programme into the theory that we take for granted today. For younger children, diagrams such as this http://www.deepseachallenge.com/wp-content/uploads/2012/03/mariana-trench-graphic-30812.jpg help to compare and connect tallest, deepest and highest features of the world.

The existence and origin of ocean garbage islands is still a widely debated issue that could form part of a study of sustainability. They have strong links to ocean currents and maps such as these can provide a useful starting point for a geographical enquiry: *'Where does all our rubbish go?'* or *'Do garbage islands really exist?'*

Another really current topic related to oceans is El Nino and its impact on our climate. http://www.agweb.com/assets/1/6/MainFCKEditorDimension/El_Nino_4.png The topic currently forms part of specifications at A level in England and Wales.

Activity three – Local area mapping
Digital mapping provides a range of opportunities to find maps and images for studying a student's local area. Subscription to the Ordnance Survey: https://www.ordnancesurvey.co.uk/education-research/teaching-resources/ provides a range of bespoke mapping resources in hard copy or for download to different devices.

The GA offers a range of resources on how to plan for progress when using Ordnance Survey Maps http://www.geography.org.uk/resources/ordnancesurveymappingresource/

Links from the Geographical Association - Opportunities not to be missed!

Connecting Classrooms:
The GA is currently offering a free training package on teaching critical thinking. Critical thinking and problem solving have been identified as key skills which support students' learning, raise attainment and strengthen their development as informed and thoughtful future citizens. They add value to the National Curriculum, GCSE and A level courses including by developing critical enquiry and analysis skills, and understanding contemporary issues. This training is part of the British Council's new worldwide Connecting Classrooms programme. It will be led by experts from the GA and SSAT. Available dates are shown here:
http://www.geography.org.uk/projects/critical-thinking-in-geography/free-training-package-in-critical-thinking/

Global Learning Programme:
The Global Learning Programme supports teaching and learning about global issues in key stages 2 and 3. With support from the GLP, the UK government aims to embed Global Learning as regular practice at whole school, curriculum and classroom level. The programme – with geography as a leading subject - will help students gain additional knowledge about the developing world, globalisation, and the causes of poverty and what can be done to reduce it. They will also develop the skills to interpret that knowledge, such as the ability to investigate, think and make judgements. Find out more about the GLP themes and outcomes.

The GA is currently looking for more schools to join the programme and further information can be found here: http://www.geography.org.uk/projects/globallearningprogramme/opportunities/

Connecting with the future

Cross-curricular

This resource considers ways we currently connect with each other, how we are likely to connect globally in the next decade or more and how we can connect with what the future may hold.

An interesting starting point is to invite students to consider how they are informed of news and experiences from places they don't know compared to those they are familiar with; in other words, how they connect with people, places, issues and processes and their global perspective:
http://www.geography.org.uk/cpdevents/onlinecpd/globaldimension/startglobalandthinklocal/

Activity one – Valuing the experience of others
In his story set in verse, *If you're not from the prairie...*, David Bouchard sets out to show us everything he values about living on the prairie in Saskatchewan, Canada:

> *'I knew others had experienced cold and wind, but I doubted that they had known mine. Could anyone understand what I was, without having shared my dust, my wind, and my blizzard?'*
> Can we ever really know something that we haven't experienced for ourselves?
> I think we have to have to try, because developing an understanding that there are 'many ways to live in the world' lies at the heart of both geography and global citizenship.'

Activity: If you're not from...

Start from your own local area and replace the 'prairie' with your own locality e.g. city, fens, island, village etc. The book uses a simple structure you can follow:

> *If you're not from ...*
> *You don't know the (physical or human or environmental feature)*
> *You can't know the*
> *If you're not from ...*
> *You don't know the ...*

Ask each student to contribute one page to a class book with a photo or painting to illustrate it. E.g. The Tardis from Dr Who is a great way of connecting with the future!

Activity two – Looking to the future
What will *it* be like in 20, 50 or 100 years' time? How will the ways we connect in 2036 compare with how we connected in 1996 (taking pictures, making phone calls, watching movies).

Students can think creatively, generating ideas, suggesting hypotheses and applying their imagination. The '*it*' could be technology in their homes, the place they live and the ways they travel around. Alternatively, it could be a place, location, environment, process, issue, war, disease or system (e.g. river or weather) that they have or will go on to study at a range of scales. An image from the past could be shared (as a mystery object) which illustrates a way we connected in the past. The key 5Ws questions can be agreed to find out about the object and then reflect on how it has developed by 2016, before considering how it may go on develop our connectivity into the future. E.g. The first commercial text message was sent in Dec 1992.

Activity three – Shift Happens (KS2 - KS3)
Watch the video Shift happens 2013 http://2020education.org/video/shift-happens-2013-v3 from 2020 Education, who's aim is to empower young people to address global issues through local projects. For each of the predictions students can investigate what came to fruition, which didn't and why?

Compare the clip with a prediction for 2028 where a school has shared its connection with what the world will hold for us in 2028 https://www.youtube.com/watch?v=QpEFjWbXog0 (*A cautionary warning: the 'comments' some have posted below the video are not appropriate for young people so you should be in control of sharing the clip*).

Global Learning programme
http://geography.org.uk/projects/globallearningprogramme/ and for related resources
http://geography.org.uk/projects/globallearningprogramme/resources/

The seventeen new Global Goals for Sustainable Development launched on 25 September 2015 https://www.tes.com/worldslargestlesson/ supports teachers in planning and delivering lessons linked to these goals and encouraging young people to look to the part they play in the future connectedness globally of populations to achieve the goals.
The link to Global Learning and creative blogging:
http://geography.org.uk/projects/globallearningprogramme/cpd/creativeblogging/ and the KS2 activity with the full project description helps to connect young people with the world they live in today and how it may change into the future.

Links
Worldwise Week 2013 'Looking to the future' contained a wide range of activities and ideas for students of all ages to connect with the future. The resources can be downloaded from
http://www.geography.org.uk/getinvolved/worldwise/worldwiseweek/#16500

Where will I live? This GA project provides unique and incisive opportunities for young people to consider this very question about their futures, make connections and consider ways of influencing the future;
http://www.geography.org.uk/projects/wherewillilive
Developing sustainable futures
http://geography.org.uk/projects/globaldimension/learningactivities/futures/#top
Thinking about food futures http://geography.org.uk/cpdevents/onlinecpd/geographyoffood/plenary/#top
Sustainable development/futures http://geography.org.uk/projects/ks4ict/sustainabledevelopment/#top

Transport and travel connections

Cross-curricular

Transport and travel is something almost all of us experience most days of our lives, whether it be the act of commuting to and from work and school, visiting friends and family – who may be round the corner or much further afield, or going on holiday. Many of us also experience multiple types, or modes, of transport each day or in the course of a year. Transport and travel connect people, places and cultures in a multitude of ways and at an almost infinite range of levels or complexities; but also there may be disconnections, for example the rural village that has its bus service withdrawn or where cultural activities become a tourist spectacle. The following activities aim to give you a range of different ways to explore the connections transport and travel do and do not enable us to make, some of the less obvious connections and/or disconnections, and suggest some ways of taking part in the *Year of Fieldwork*.

Key questions:

- How far and often do we travel each day, and how many/what connections does this enable us to make?
- What transport and travel disconnections are there, local to global?
- Why do people like to travel and are they travelling more often/further?

Activity One – Local travel survey (KS1- KS3)

Students could design a survey to find out where each of their class mates travel from to get to school each day. It is a good idea to get students involved at the design stage as this will give them more ownership over the fieldwork/data collection, and they could come up with additional ideas that are personal to them. The survey could take into account: distance travelled, mode(s) of transport used, specific features or landscapes the journey passes through, to name but a few ideas! Once students have surveyed their class, or perhaps a different class within the school the results could be collated and mapped. One of the simplest options for displaying the data, perhaps particularly at primary level, would be to put up a large map of the area around the school and plot where each student starts their journey from with coloured pins and then use string or coloured wool to link each of these points with the school. If done with a whole class it may produce some interesting patters or areas where a lot of students come from or areas where few come from. The idea of areas being more or less connected or disconnected could then be discussed and/or written up.

If you are doing this activity with older students the follow up could be expanded to consider:

- How far students travel (both by straight line distance and by route taken)
- The different landscapes/land use zones they travel through
- Any cultural aspects to their journey
- Extend with other journeys they might make e.g. to friends, relatives, family, sports matches, … these could then be mapped for a week or even a month to create a travel web map
- The intersections or interactions between student's travel journeys could be investigated
- The reasons for the route taken or mode of transport used could also be studied
- To extend the project further students could carry out additional research to find out about areas in their locality that are particularly well served/poorly served (connected and disconnected) by buses, trains, etc. Why is this the case? What are the views of people who are affected?

Activity Two – Transport and travel hot topics (KS3 - KS5)

Current issues within national and international travel and transport include:

- The HS2 rail scheme between London, the Midlands and Northern England
- The proposed Heathrow third runway
- The issues surrounding migrants trying to cross the Channel in lorries and/or via the Channel Tunnel

Any of these, or others closer to home, provide topical issues that would be ideal for research and then a focused, balanced debate – perhaps with groups of students within a class being asked to research a particular viewpoint or group of people caught up in the issue and presenting their findings in role groups. Throughout this activity, students should be encouraged to research deeper than the stereotypical portrayals and the way in which different aspects of the media report such issues, and critically evaluate these. What's more, more importantly, students should identify and evaluate which groups of people are included and excluded from the debate, and most crucial of all, who is being connected/disconnected (and in what way(s)) because of the issue.

Activity three – National and international travel connections…and disconnections (All KS)

Thinking at the very largest scale is often tricky. This activity should get students thinking far beyond their location and even the country in which they live. Take any one (or more than one) of the following major transport hubs and conduct some fieldwork:

- Any international airports: Heathrow/Gatwick/Luton/Stanstead/Manchester/Glasgow
- Any London train termini, or major 'hub' station such as Reading/Bristol/Cardiff/Birmingham/Shefield/Leeds/Manchester/Crewe/York/ Newcastle/Edinburgh
- Eurostar London St Pancras terminal

The fieldwork research could take any, or multiple, of the following forms. Or even better, if your school is near one of these transport 'hubs', why not go and visit!

Some ideas for fieldwork include:

- Find out all the destinations served from the 'hub' each day/week
- What is the frequency of services to those destinations?
- How many people pass through each day/week (called the footfall)?
- If you can visit the 'hub' why not carry out your own counts of people passing a certain point(s) in, say, 20 minutes and then multiply this up to work out an approximate daily/weekly/annual total (remember if you are going to be actually inside the 'hub' it might be a good idea to ask permission of the owner/operator beforehand (they might well be able to give you and your students a behind the scenes tour or extra data to support your study)

- Think about the destinations served…are there any conspicuous 'gaps' or areas not served? Where? Why?
- In what ways do these 'hubs' connect us more than ever before with other parts of the country or world?
- In what ways do these 'hubs' disconnect us more than ever from certain parts of the country or world?
- Can students point to any future trends? What are their views?

Links
HS2:
The Campaign for the Protection of Rural England:
http://hs2maps.com/
The BBC News summary page:
http://www.bbc.co.uk/news/uk-16473296
Birmingham's Chamber of commerce support for the scheme:
http://www.insidermedia.com/insider/midlands/128563-blackett-outlines-hs2-impact

London Airport:
Why is more capacity needed?:
http://www.irishtimes.com/business/transport-and-tourism/uk-airports-losing-business-due-to-heathrow-slots-committee-hears-1.2137598
Proposals outlined:
http://www.bbc.co.uk/news/magazine-23612511

Wet, Wet, Wet – Flooding connections

Secondary

Flooding is a natural process and is the response of a natural system (a river system) to the presence of too much water during an interval of time. A simple equation can be used to help explain flooding:
Q = A × V, where **Q** is discharge (amount of water), **A** is area of the river channel, and **V** is velocity.
When excess water (discharge) is present in a river or stream, at first the water moves more quickly (**V** increases) and perhaps some erosion of the channel takes place (i.e. **A** increases). However if discharge (**Q**) increases too rapidly, water will move out of the channel (A) and out onto the surrounding area, known as the **floodplain**. The **floodplain** is the area that floods first.

This is a bit too simple though. The same amount of rainfall doesn't necessarily result in the same amount of flooding – or even any flooding at all. The water will move over and through the land to reach the lowest points and these areas are where flooding is most likely to happen. Floods are caused by a variety of factors, both natural and man-made. Some obvious causes of floods are heavy rains, melting snow and ice, and frequent storms within short time duration.

Flooding usually results from a combination of factors such as slope, human activity, soil properties and storms.

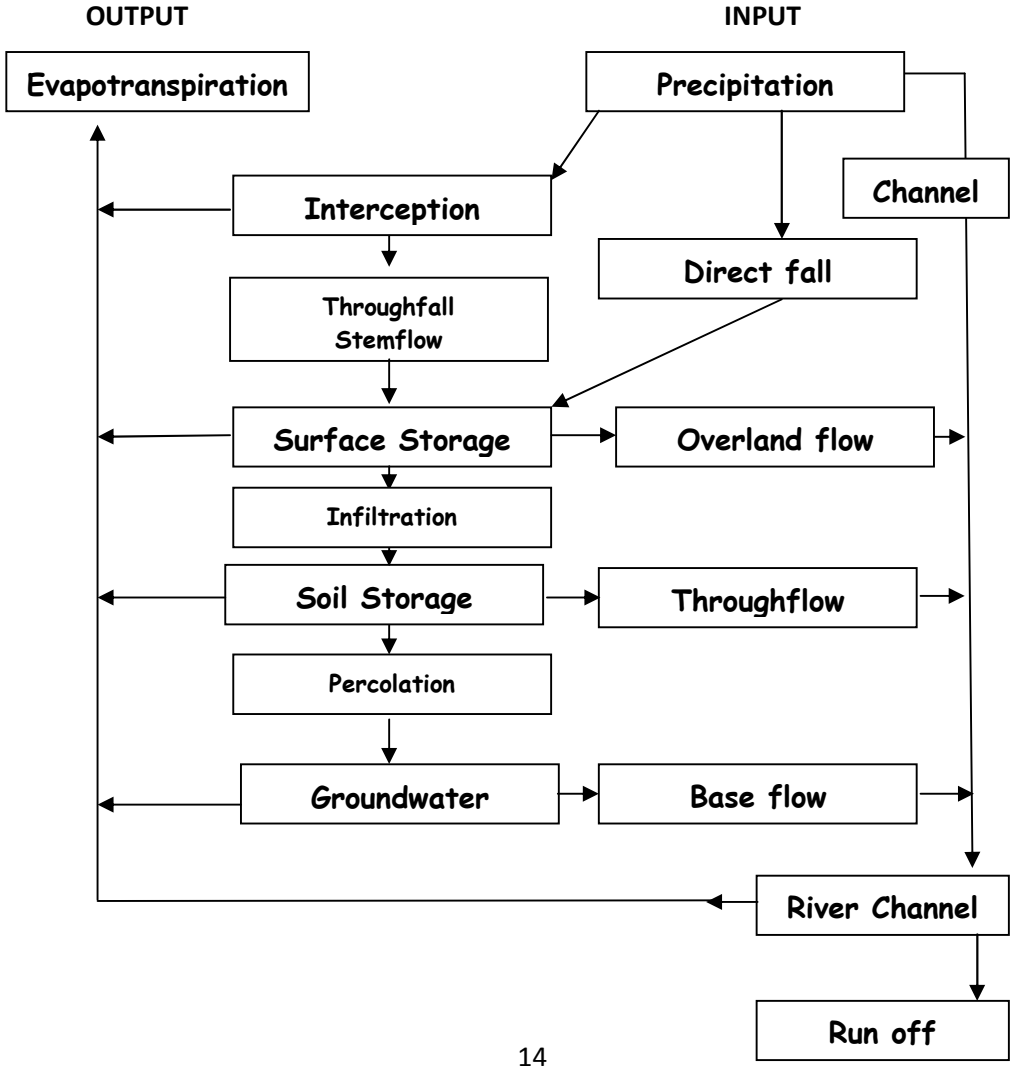
In order to understand what is happening we need to think about how rainfall arrives at the channel in the first place. This study is carried out by defining the area of land drained by a river. This is called the Drainage basin or the Catchment area – This is the area where all the water that falls will eventually reach the river channel (unless it is lost to the system before it gets that far). The drainage basin can be seen as an OPEN SYSTEM. There are INPUTS, STORES and OUTPUTS. Some water passes through a series of TRANSFERS. You can see from the diagram that there are many pathways that water can take before it arrives at a channel.

The language of the Drainage basin:

- **Precipitation** is the term for when water falls to the ground in a variety of forms; hail, rain, freezing rain, sleet or snow.
- **Evapotranspiration** This is loss of water by evaporation from the soil and transpiration from plants
- **Overland flow** is when water flows over the earth's surface, joining rivers and eventually, the sea. This is the fastest form of water transfer. It happens in heavy rain and floods
- **Throughflow** is the movement of water through the ground. It is eventually likely to form a spring as it re-emerges on the earth's surface after meeting an impermeable layer of rock.

- **Base flow** The part of a river's discharge which is produced by groundwater seeping slowly into the bed of the river. It usually increases slightly during a wet spell of weather.
- **Throughfall** is the falling of water through the vegetation from the top leaves to lower levels.
- **Groundwater** is the water that is stored in the rocks below the surface. This is the slowest form of water transfer. It only occurs if the rock has spaces for the water.
- **Storage** Rain drops can be stored at various points such as on the leaves – Interception storage or on the ground (puddles) as surface storage and even in the soil as soil store. All this water may never get to the river system. It may be used by plants or imply evaporated away.
- **Interception** The process by which raindrops are prevented from falling directly on to the soil surface by the presence of a layer of vegetation. Water can be intercepted by plant leaves, stems and branches in the trees, and also by shrubs and grass. Eventually water drips off these surfaces.
- **Infiltration** The passage of water into the soil. Water is drawn into the soil by gravity and capillary action. It takes place at a higher rate at the start of a rainfall event, but as the soil becomes more saturated then the infiltration rate decreases.
- **Percolation** This is the vertical and lateral movement of water through spaces between soil and rock layers. The vertical and lateral movements are caused by gravity.
- **Throughflow** The movement of water down slope within the soil. It is particularly effective where infiltration is prevented by an impermeable layer of rock. Throughflow may also take place through route ways created by tree roots and animals.

Water stores and pathways of water



The rate at which the rainwater reaches the river depends on a number of factors. Impermeable rock (i.e. doesn't allow rainwater to sink through) such as granite, will mean there is a greater amount of water flowing over the surface (surface flow or overland flow). This will reach the river quicker than water, which percolates slowly through the rocks. Therefore, permeable or porous rocks (such as limestone and chalk) will mean that water will be slower reaching the river. Impermeable rocks will contribute to the inability of a drainage basin to cope with a storm or prolonged period of heavy rainfall.

The relief of the land, whether there are steep or gentle slopes, the type of vegetation, the amount of urbanisation, the current level of saturation and the land use will all affect the flow of the water in a drainage basin. As a general rule, the greater the proportion of water that is held as groundwater and that travels as throughflow, the less chance there is of a sudden surge or flood. Where there is a greater amount of water flowing over land the drainage basin is prone to damaging floods.

Human Impact
Humans affect the drainage basin system by altering the amount of water in the system, or by changing the system. Usually the reasons behind this are to lessen the risks of flooding, to build upon the flood plain or to use the water in some way. For example, water can be taken from rivers to use as drinking water so it is stored in reservoirs. This would then affect the system as there is less water in the river system.

Urbanisation also has a major impact. More and more houses are being built on flood plains, despite the recent years of well-publicised flooding. Urbanisation increases the flood risk as the ground is made impermeable and water is taken, via drains, into the river more quickly causing higher water levels. The common practice of humans to build homes and towns near rivers and other bodies of water (i.e. within natural floodplains) has contributed to the disastrous consequences of floods. Source
http://science.jrank.org/pages/2757/Flooding.html

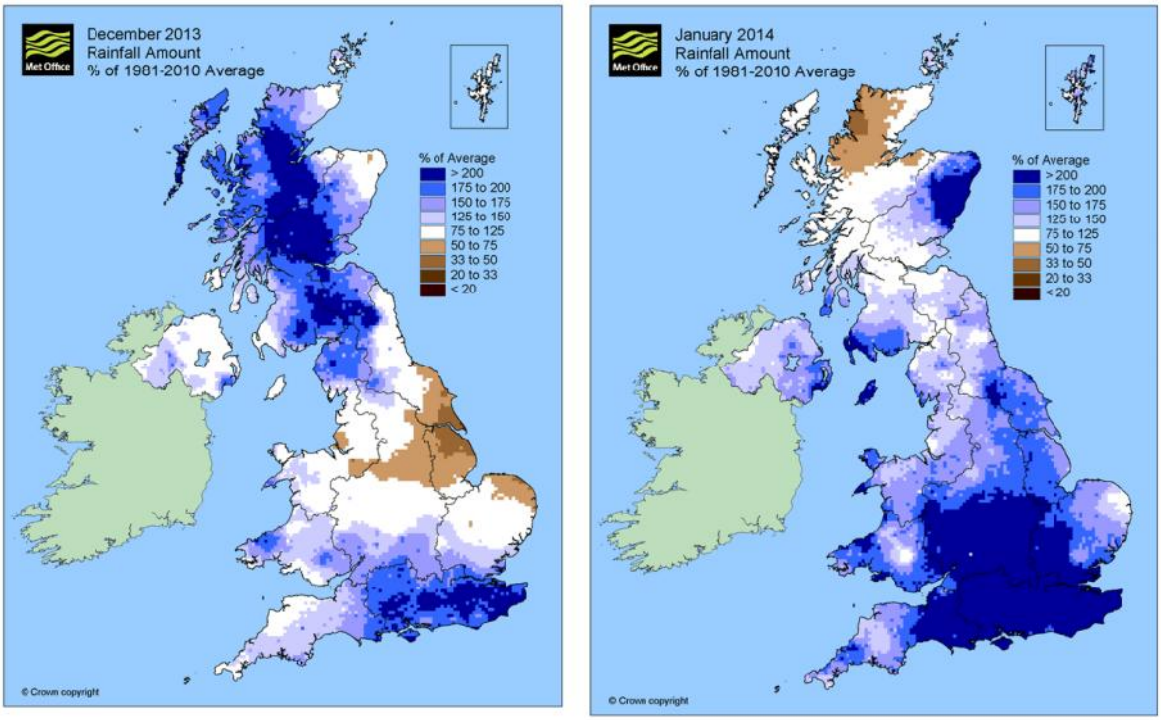
Key questions:
- When it rains over all the land why doesn't the entire land flood?
- What causes flooding and which areas are most at risk?

Activity one – Key terms and definitions (KS2 - KS4)
Separate the words above from the definitions and set up a card sort.

Create a blank 'Pathways of Water' diagram and set your students the task of putting the terms in the correct place. Set your students the task of investigating a range of various types of human activity which might impact on flooding e.g. afforestation, deforestation, drainage improvement, flood control, etc. Work out the differing effect on the pathways of water in the drainage basin.

Investigate why intensive rainfall for a number of days/early spring following severe winter may lead to lead to flooding.

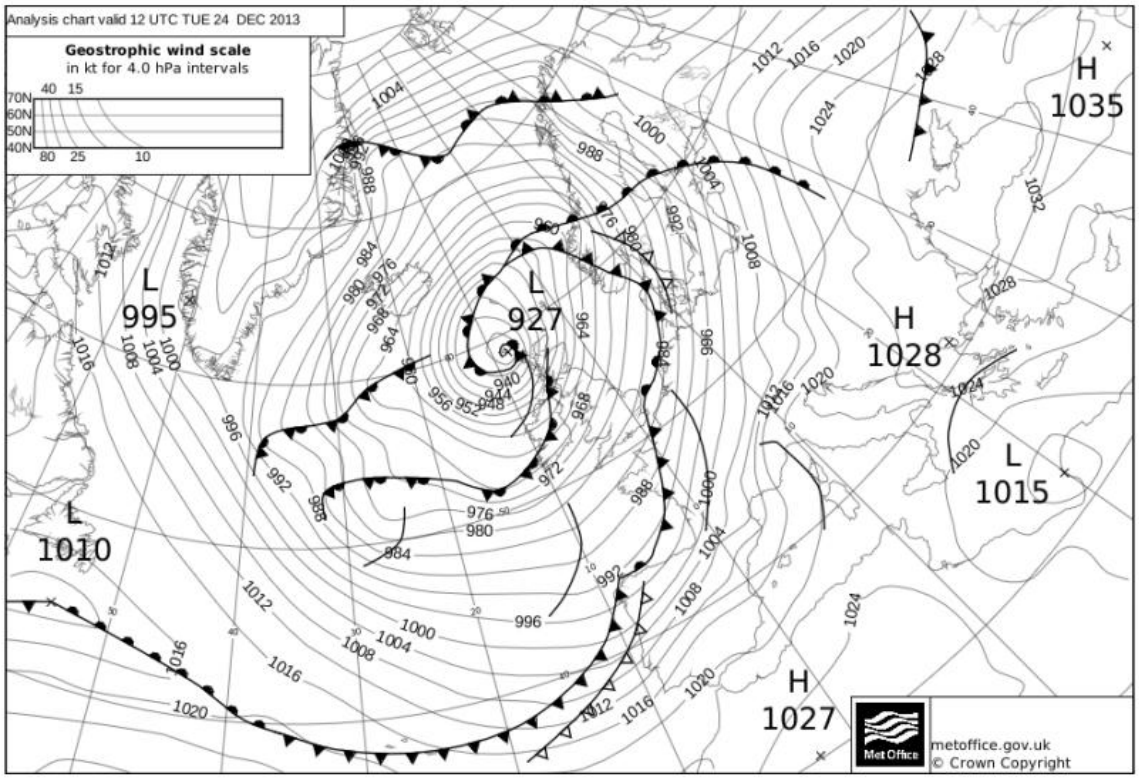
Activity two – Why did we have so many floods this winter? (KS3 - KS5)
This winter the UK suffered a much larger number of storms which lead to major coastal damage and widespread flooding:
http://www.metoffice.gov.uk/media/pdf/g/e/Recent_Storms_Briefing_Final_SLR_20140210.pdf
Although no individual storm was exceptional, the clustering and persistence of the storms was very unusual. December and January were exceptionally wet. For England and Wales this was one of the most exceptional periods of winter rainfall in at least 248 years.



Rainfall for December 2013 and January 2014 from the observational network, showing the distribution of rainfall anomalies as a % of the long-term average from 1981-2010

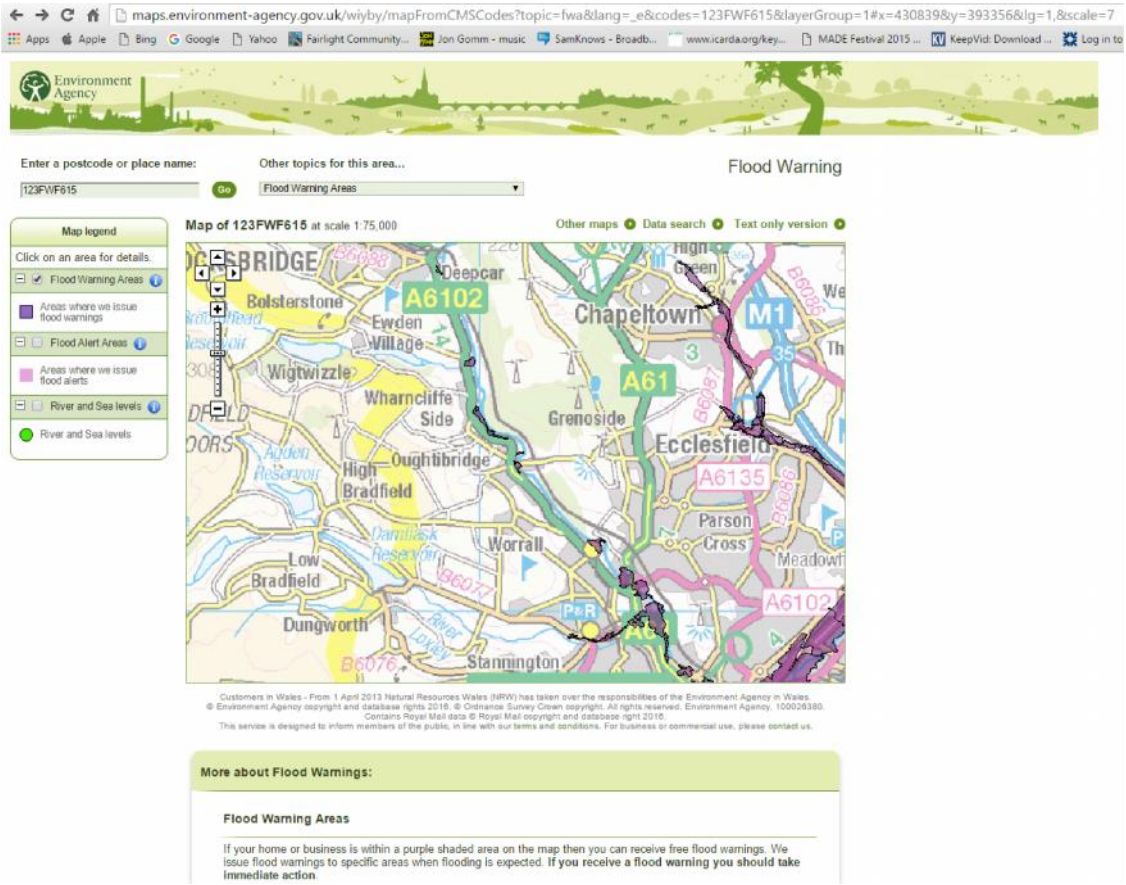
Activity three – Compare the rainfall patterns for December 2013 and 2014 (KS4 and KS5)

Research which areas of the UK were most prone to flooding in 2014? How is this different from 2013?



Surface pressure chart for 24th December showing the formation of an intense depression to the north of Scotland

Activity four – Which area of the UK is likely to be most in danger of flooding over the Christmas period? Is my house likely to flood? (KS2 - KS5)



Find out whether there are any flood warnings in your area. Search for your own flood warning map: http://maps.environment-agency.gov.uk/wiyby/mapFromCMSCodes?topic=fwa&lang=_e&codes=123FWF615&layerGroup=1

The Environment Agency is responsible for managing the risk of flooding from main rivers, reservoirs, estuaries and the sea. Lead local flood authorities are responsible for managing the risk of flooding from surface water, groundwater and ordinary watercourses and lead on community recovery, including making sandbags available to those that need them: http://apps.environment-agency.gov.uk/flood/31618.aspx

Use the Environment Agency website to find out if there are any flood warnings across the UK. If there are create a warning poster for the areas at risk: http://apps.environment-agency.gov.uk/flood/3days/125305.aspx
Are this year's floods the worst ever?

Activity five – Winter flood 2015-16 (All KS)
Follow the links to investigate last winter's floods and create a newspaper report summarising the floods (Where? When? Why? How?) http://www.theguardian.com/environment/2014/feb/11/englands-floods-everything-you-need-to-know
http://cehsciencenews.blogspot.co.uk/2014/02/record-breakers-climate-change.html
http://www.metoffice.gov.uk/media/pdf/g/e/Recent_Storms_Briefing_Final_SLR_20140210.pdf
What are the chances of the UK seeing more flooding due to climate change?

According to the Guardian Newspaper flooding is rated as the worst climate change threat facing UK:
http://www.theguardian.com/environment/2012/jan/26/floods-worst-climate-change-uk

> *'Scientists and other experts, led by Defra, selected the 100 most pressing threats and opportunities and rated these according to their impact. The four most immediate "high consequence" risks all concerned flooding, with the expectation that in 10 years or so there will be increased flood damage to homes, with knock-on effects on insurance premiums and mental health.'*

Between 1.7 million and 3.6 million people are expected to be at risk of flooding by 2050, without investment to lessen the threat. The UK economy is also among the worlds most vulnerable to flood risk:
http://www.businessgreen.com/bg/analysis/2329570/flooding-uk-economy-among-the-worlds-most-vulnerable

> *'Risk analysis firm Maplecroft said that the UK is seventh highest of 197 countries assessed according to their economic exposure to flooding, behind the US, China, India, Bangladesh, Germany and Japan.'*

Activity six – Impacts of flooding (All KS)
Identify the major actions the UK needs to make to reduce the impact of flooding. Think how to communicate this most effectively; this could be through a poster, blog or videocast to educate non geographers about the dangers and your solutions.

SEND Connections – How do students with special educational needs connect with the world?

Cross-curricular (SEN)

This resource will focus on connecting the world with SEN (special educational needs) students. Here are some of the techniques used to bring it into the lives and thoughts of students who have special needs. All of these techniques have been used in an SEN school where students have academic abilities between p1 and National Curriculum Level 2. The age range taught within the school is 11-19. However, these strategies, mostly focusing on simple activities and teaching through all of our senses could be adapted for both primary and secondary groups, and may help to make teaching certain concepts more memorable and accessible for all students.

In short, when students feel a disconnect with the world it can affect them as people, as they will have less grasp on who they are, where they fit in with society and how they relate to and interact with other people and environments. Through using these strategies that many students find engaging we can encourage a wider group of people to feel connected with the world, allowing them to understand the physical aspects of place and empathise with the human aspects. Only through an inclusive approach to geography teaching can we make geographical connections.

Activity one – What are areas like? - Developing imaginations and images of places
One of our greatest tools as geographers is aerial photographs. Through a combination of aerial photographs, photographs of plants and symbols my class were able to learn about the diverse ecosystems of South America. They easily matched the symbol showing the rainforest and photographs of the plants with the greenest areas. They also matched the photographs and symbols of sand and barren landscapes with the areas depicting the Atacama Desert. These activities, supplemented with videos, help form the student's geographical imaginations and knowledge of an area. Equally, this activity could be completed with students up to GCSE level, for example plotting all the case studies onto an aerial photograph and surrounding them with other smaller images and words that relate to a case study.

Activity two – Learning about countries with all our senses
When learning about a different country the focus tends to lie with traditions, customs and points of interest. Without low ability students we often teach through the telling of a story that uses many props that act as sensory stimuli. We often play a video alongside these stories, for example when teaching about China one video that could be used is http://www.bbc.co.uk/education/clips/zq6fgk7 to teach about Lijiang.

As the video plays, it can be paused at certain points to feel snow and ice as the mountains come on screen and to talk about the weather. The video could also be stopped at the fishing lake to give students an opportunity to role play fishing in class - this could involve feeling slippery fabric, plastic fish and nets.

These tactile opportunities can allow for opportunities that increase student's understanding and engagement. I also allowed the students to have the olfactory (smell) and taste experience of types of tea when this was shown on screen. Through having these sensory experiences that encompass the traditional 5 senses our least able students are given the opportunity to show sensory preferences and cooperate with staff members, while the most-able have increased memory retention of the topic.

Finally, on special days or lessons we can also recreate different environments both inside and outside the school. We have set up a gazebo outside in a playground as an igloo and classes have visited the tent to read a related story and explore the relevant artefacts, ranging from pictures and sensory animals to plants. Using sensory objects is a great way to make lessons more memorable - students are always excited to taste and use food in lessons. In addition, the olfactory sense has been strongly linked to aiding memory. There are many articles that write about this phenomena - try it to make your lessons memorable for all the right reasons! Smells that could be used include specific plants to an area, sweaty clothes when talking about factory production or even specific foods or spices of a region or country.

Activity three – Transport as an investigation

As many schools have done we have looked at transport as a discrete topic. When looking at transport we often use sounds and images to go with the words spoken by a teacher. My students enjoy guessing what mode of transport makes the sound I am playing - the more obscure of these include walking, an ice cream van and helicopters. Again, as with the geographical imaginations we also use symbols to support learning, and through the use of these symbols students are able to explain how they go to familiar local places such as the shops, school and to relatives' houses. Our more-able students are able to turn this survey data into graphs and with support write an analysis using a word bank.

Activity four – Emotional Mapping and exploration of familiar places (KS3)

Within KS3 geography lessons, initially we focus on familiarising ourselves with the school including different learning bases, classrooms and resources. Many of our students use objects of reference, which are a way of communicating where we are going within the school, for example by exploring a microphone or bells on the way to the music room; another example is holding a towel that smells of chlorine on the way to the hydrotherapy pool. Other students use photographs, so we show them the room before assisting them there. We also have familiar symbols on all classroom doors, alongside switches that say the room name when pressed by the student. When travelling around the school students quickly work out their favourite rooms. Some groups have gone around the school with a map, drawing on faces onto all the areas that make them happy. This allowed our students time to reflect how they felt in each place and some could give reasons for their emotions in certain areas.

Activity five – Weather - creating a weather map

We often talk about the weather in tutor time. Activities range from learning Makaton signs for different weather conditions to linking the weather report with a map with pre prepared symbols that we can stick on in class. Some students also link the weather to the clothing or equipment we will need if going outside, for example identifying sun cream for hot weather or an umbrella and coat when raining.

Links

The Sensory Room article www.sln.org.uk/geography/Documents/The%20sensory%20room.doc
Smells and Memory https://www.psychologytoday.com/blog/brain-babble/201501/smells-ring-bells-how-smell-triggers-memories-and-emotions