Understanding progression

Geography

Understanding progression in Opening Worlds Geography

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1 Introduction

1.1 The curriculum is the progression model

Geography enables pupils to learn about many aspects of the contemporary world at different scales (local to global). The past world provides context for the present world and then geographers predict on to the future. The potential range of material to study is vast! In this curriculum, we have selected and woven together important geographical themes (such as settlement, rivers, sustainability) with place studies (such as North Wales, UK, South America) and case studies (such as deforestation in the Amazon Rainforest) to give a comprehensive grounding in geography. The Opening Worlds curriculum provides carefully structured knowledge about our complex world for Key Stage 2 pupils. It meets and exceeds geography requirements in the National Curriculum for England and provides an excellent foundation for Key Stage 3 and GCSE.

The overall goal in the Opening Worlds curricula is broad, thorough, diverse and coherent knowledge, so that by the end of their schooling, all pupils can orient themselves in the world. Simply to master a really broad, rich, coherent and rigorous curriculum, is to make progress. There is no 'progression model' that needs to be imposed on top.

1.2 What does progression look like in a knowledge-rich geography curriculum?

Having selected suitable geography content from the vast range of possibilities, the next challenge is to sequence the material to make its secure mastery much more likely. A curriculum needs to be structured not only to provide a broad, rich array of coherent content; that content needs to be arranged to ensure that pupils move through it with growing security and confidence.

To do this, curriculum developers have to be very clear about the difference between being *information*-rich and *knowledge*-rich. Information implies a list of facts. Knowledge, however, is coherent, connected and/or structured information. It is very easy for a geography curriculum to be a collection of interesting but unconnected elements – waterfalls one lesson, meanders the next, then on to global trade. The lessons may be interesting and enjoyable for the pupils, but they remain somewhat mystified about the overall purpose or journey of the subject and opportunities for creating readiness are lost.

The rationale for sequencing must be subject-sensitive. This means that the driving intellectual resource for achieving this is the subject's natural contours and purposes. A number of strands of progression are commonly proposed within geography education:[1]

- increasing breadth of knowledge (for example knowing more types of volcanoes or more case studies of migration);

[1] Taylor, L. (2013) What do we know about concept formation and making progress in learning geography? In D. Lambert and M. Jones, *Debates in Geography Education*. London: Routledge, p. 302-313.

- increasing depth of knowledge (for example moving from a simple version of the water cycle to a more complex version with a greater number of stores and flows);
- moving from understanding of concrete, tangible phenomena to more abstract ideas and models (for example from the characteristics of a particular rainforest tree to the role of forests in the carbon cycle);
- moving from understanding familiar or local places to unfamiliar or distant places[2] at a range of scales, developing pupils' locational frameworks and sense(s)[3] of place;
- increasing ability to make connections, to see patterns, to understand complexity and to predict from what is known;
- being able to employ increasingly precise and technical vocabulary;
- increasing range, accuracy and independence in use of geographical skills (such as creation and interpretation of visual representations).

Geographers have traditionally separated the discipline of geography into physical geography and human geography.[4]

- Physical geography focuses on natural features of the world, including themes such as river landscapes and processes, coastal landscapes and processes, natural hazards, weather and climate, and ecosystems.
- Human geography focusses on the world of people, such as settlements, work, migration and globalisation.

But now we need a big 'however'! While this division helps to make sense of a complex and diverse body of knowledge, it also has limitations! The human and physical worlds are constantly interacting and changing each other, and in some ways, it is unhelpful to separate them.

Therefore, although we have used a thematic approach for many units in the Opening Worlds geography curriculum, we have also sought to emphasise interconnections and interactions within and between the human and physical worlds (see Section 3).

The rationale for a curriculum must also be pupil-sensitive. This means that the mastery of previous content plays a big part in unlocking future content. The pupil advancing through it must constantly feel enabled by what they have already learned, recognising vocabulary and ideas, themes and places, so that the new material makes sense through connection and any references to such vocabulary, ideas, themes or places (whether direct or implied) don't clog up the working memory.

So the arrangement of material must be both subject-sensitive and pupil sensitive.

[2] Note that places local to pupils are not necessarily familiar to them and distant places are not necessarily unfamiliar, but a common strand in progression is from home area to unfamiliar and, usually, distant places.
[3] Senses of place reflects the way that places have different meanings and interpretations for different individuals and groups.
[4] Sometimes environmental geography is seen as a third major division, encompassing the interaction between people and the environment. Alternatively, this interaction is explored as part of human or physical geography.

1.3 How does Opening Worlds make sure that this progress happens with efficiency?

As curriculum developers in Opening Worlds, we set ourselves the challenge of asking: How do we ensure that no pupil slips through the net and misses the connections? How do we make sure that all the fascinating links and connections, continuities and contrasts, themes and patterns, do their curricular work in making pupils ready for what comes later? How do we make sure that the curriculum appropriately balances breadth and depth for locational, place and thematic knowledge, and keep the overall curriculum as coherent as possible?

The solution has been that the Opening Worlds curriculum and its pedagogy (through the ten techniques) makes the most of these natural contours of the subject and is highly systematic:

- It is systematic about teasing out the ideas, vocabulary and skills which need to abide in memory.
- It is systematic about ensuring that they do abide in memory, not merely by random quizzing and retrieval practice but by revisiting them, re-using them and practising them in new contexts.

Thus, pupils arrive at new material, and can 'progress' into this new knowledge because they have earlier knowledge which makes sense of the new context, because they already recognise essential vocabulary that they will need and because all this security has freed up memory space to learn the new material and vocabulary too.

So Opening Worlds uses not just its thorough pedagogy but also the curricular arrangement of material to make things memorable. It then uses what pupils have remembered to make access to later content not just accessible, but thrilling, liberating and fascinating.

In the remainder of this document, we will break down these different types of progression into substantive knowledge and disciplinary knowledge. The two are profoundly connected, but it is easier to describe crisply the structuring and its effects if we artificially separate them, for the moment, just as they are visually separated on the curriculum plan.

2 How does the Opening Worlds curriculum ensure that pupils gain and retain an expanding body of *substantive* knowledge?

As in all well-planned curricula, pupils' ability to progress into later units is made possible by what they have studied in earlier units. Earlier content creates readiness for later content. All content, working together, plays a part in this.

The only way to show this properly is to take any double-page spread from a later unit (say a Year 5 unit), and to point out how the references to places and themes, the vocabulary, the visual representations and the styles of text, are all made possible because of the places and themes, the vocabulary, the visual representations and the styles of text present in multiple earlier booklets.

In addition, however, it is possible to use charts and tables to illustrate particular *types* of progress that become possible through prior content. This section illustrates this in detail.

But remember, no matter how simple and convenient a chart or table might look, the *best* way to show it is to take a double page of any Year 5 or Year 6 booklet, and to show how the richness of prior knowledge (which defies summary on any chart) has made possible just about every aspect of vocabulary, expression and geographical idea. When you are explaining geography progression to a stakeholder (parent, governor), to a new member of staff or to an inspector, by all means show these charts and tables for speedy access, but the best and most impressive way to show it is to go to a booklet for upper Key Stage 2 and show how it is only possible because of all that has been taught before.

Geography subject leads who are familiar with the whole geography curriculum find this a very easy, speedy and natural thing to do. Nothing is more powerful in explaining why the geography curriculum has such impact on pupils' subsequent learning!

2.1 Building understanding of key themes in geography

The following key themes in geography run through the Opening Worlds curriculum:

Human geography	***Physical geography***
• Economic activity and trade • Population and migration • Resources • Settlements • Sustainability[5]	• Biomes • Landscapes and processes • Natural hazards • Oceans • Weather and climate

While one theme in geography is not intrinsically 'harder' or 'easier' than the others (for example landscapes and processes are not harder than biomes), there is a natural progression *within* each of these themes and there are also links and resonances *between* them. Paying careful attention to sequencing when building the curriculum affords opportunities to create readiness for later learning.

Let's trace two themes through Key Stage 2:

[5] Sustainability lies in the intersection between human and physical geography. For the purposes of this document we have positioned it as human geography because it centres on the viability of people's relationship with their human and physical environment.

1) Settlements →

	Autumn	*Spring*	*Summer*
Year 3	1 Rivers 2 Mountains	1 Settlements 2 Agriculture	1 Volcanoes 2 Climate and biomes
Year 4	1 Rhine & Mediterranean 2 Population	1 Coastal processes 2 Tourism	1 Earthquakes 2 Deserts
Year 5	1 Why is California so thirsty? 2 Oceans	1 Migration 2 North and South America	1 The Amazon 2 Interconnected Amazon
Year 6	1 Energy and climate change 2 Ethiopia	1 Changing Birmingham 2 Jamaica	1 & 2 Local area enquiry

2) Landscapes & processes →

	Autumn	*Spring*	*Summer*
Year 3	1 Rivers 2 Mountains	1 Settlements 2 Agriculture	1 Volcanoes 2 Climate and biomes
Year 4	1 Rhine & Mediterranean 2 Population	1 Coastal processes 2 Tourism	1 Earthquakes 2 Deserts
Year 5	1 Why is California so thirsty? 2 Oceans	1 Migration 2 North and South America	1 The Amazon 2 Interconnected Amazon
Year 6	1 Energy and climate change 2 Ethiopia	1 Changing Birmingham 2 Jamaica	1 & 2 Local area enquiry

From the tables above, you can see that the themes of settlements and landscapes and processes are revisited at least once in a year, and often more than once. This enables previous knowledge to be recalled and reinforced in a natural way and then to be extended in both breadth and depth. Schema relating to each theme will be developed in pupils' memories at each point of return. When pupils engage with multiple instances and diverse examples of the same substantive concepts, they create a richer and more secure understanding at each stage.

Earlier encounters with substantive knowledge create readiness for later encounters with that knowledge at a more detailed, complex, abstract level. This helps, too, with grasping complexity and diversity. If patterns are established then counterexamples or anomalies are more easily seen, developing nuance in pupils' understanding of the world. Yet again, *the curriculum itself is the progression model,* simply by virtue of ensuring that these instances accumulate and connect, so that pupils keep them in long-term memory.

Pupils' working memories can then cope when they access and interpret subsequent material on these themes, and their overall store of knowledge keeps growing.

Let's take an example for the theme of sustainability:

A short and simple example of sustainable tourism in the Costa Rican rainforest (Year 4 Spring 2 *Tourism*) creates readiness for :

- a deeper exploration of sustainable land use in the Amazon rainforest (Year 5 Summer 1 *The Amazon*)…
- …which prepares pupils for a further example of sustainable clothing production in the Philippines (Year 5 Summer 2 *Interconnected Amazon*)…
- …which then leads on to a broader and more comprehensive consideration of sustainability within the context of *Energy and climate change* (Year 6 Autumn 1).

This increasingly rich understanding of the theme of sustainability is then applied to case studies of sustainable development in *Ethiopia* and *Jamaica* later in Year 6. Each step in the learning journey creates readiness for the next.

Moreover, as the Opening Worlds curricula for geography, history and religion have been developed in close conjunction, we have also been able to capitalise on links and resonances in substantive knowledge themes between the three subjects. For example, pupils learn about the characteristics and processes of rivers, including flooding and irrigation in geography (Year 3 Autumn 1), which then creates readiness for them to understand the role of rivers in Ancient Egypt (Year 3 Autumn 1), Mesopotamia (Year 3 Autumn 2), the Indus Valley (Year 3 Spring 1), Baghdad (Year 5, Autumn 1), Viking Britain (Year 5 Spring 1 and Summer 1) and Maya (Year 6 Autumn 1).

2.2 Building locational frameworks

Geography is best taught with careful reference to real places at a range of scales. Substantive themes in geographical knowledge are understood through real features, processes and events that are

located at real places. Place and space[6] are the fundamental 'stuff' of geography.[7] One important element of place is **location** (where something is).

For example, when children are learning about coastal towns (Year 4 Spring 2 Tourism), we describe the location of Llandudno, a coastal town in Wales. We can describe the location of Llandudno in two ways:

> First, we can describe it in **absolute** terms by pinpointing it on an Ordnance Survey map with a four-figure grid reference.
>
> Second, we can describe it in **relative** terms by using directional language or compass points, for example Llandudno is in the far north of Wales.

2.2.1 What is a locational framework?

Someone's knowledge of where places are and their orientation within those places is referred to as their **locational framework**. We each have a 'mental map' of the world around us at a range of scales.

Usually, we have a more detailed locational framework for our local area and other localities we know well, and either more or less detailed frameworks at regional, national and international scales, depending on the nature of our education and experience of the world.

2.2.2 What is the Opening Worlds approach to developing children's locational frameworks?

The Opening Worlds curriculum has been developed to enable pupils to gain and retain a locational framework for the UK, Europe, North and South America and the world. This is in line with the current National Curriculum for England and with the general knowledge that will be useful for any informed adult. This framework includes the names and locations of continents and oceans, countries and capitals of the UK, major landscape features and environmental regions.

We also go beyond the National Curriculum requirements for locational knowledge by including a Year 6 unit on Ethiopia. As well as strengthening locational frameworks, this ensures more global breadth and allows us to show more interconnection and interaction across the globe. Our east African focus in Year 6 is underpinned by history units with a substantial focus on east Africa in Year 4

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[6] Distinguishing between space and place in geography is complex as they are defined in different ways within different geographical traditions. The 'everyday' assumption tends to be that a place is a meaningful location and space is the 'container' in which places are found. This is just one way of thinking about place and space, and possibly not the most productive one. Opening Worlds training for geography teachers provides a more detailed underpinning for understanding these important concepts.

[7] Sometimes, environments are distinguished from places and spaces. An environment is the sum of the living and non-living surroundings in which people (or other lifeforms) exist. As we are using a broad definition of places, which encompasses environments, we are not distinguishing the two for the purposes of this document.

(Aksum, in Christianity in Three Empires) and Year 6 (Ethiopia, in Medieval African Kingdoms) and prepares pupils well for a focus on the African continent in Key Stage 3 geography.

Pupils make progress in building their global locational framework as the names and locations of places are used and revisited frequently at natural opportunities over time. More detailed knowledge at the regional level is built up in specific units and reinforced as it becomes relevant.

For example, the location of the Caribbean is:

- introduced in the *Oceans* unit (Year 5 Autumn 2) in the context of hurricanes;
- reinforced in the *North and South America* unit (Year 5 Spring 1);
- revisited at a more detailed level in the *Jamaica* unit (Year 6 Spring 2).

Opening Worlds booklets and lesson resources feature a wide variety of maps, and we encourage pupils to study these, to gain knowledge from them and to become excited by them. It is *thinking* about things – in this case where things are – that makes memories endure. So a combination of reflection on the significance of a location and more direct retrieval of locational knowledge ensures that useable locational frameworks build up and start to stick for good. Using various forms of retrieval practice, we often have pupils recalling locational knowledge so that these frameworks become stronger and more enduring in pupils' memories.

Thus, pupils' locational frameworks expand and become more detailed as they are fascinated by the subject and they enjoy practising their knowledge and using it in new contexts.

As in the east African examples above, we also take opportunities to reinforce and to build necessary locational frameworks in history and religion, frequently including maps in our resources for those subjects too.

In addition, we encourage schools to display wall maps of the UK and the world in classrooms, to refer to these routinely, and to have globes and sets of atlases available for use.

2.3 Building deeper knowledge of place and sense(s) of place

Location is only one element of place. In geography we want pupils to develop a rounded knowledge of the characteristics of diverse places at a range of scales. This knowledge includes the physical and human features of places, how places have changed over time to become what they are now, the challenges and issues they face now, how they might change into the future and how they are linked to other places.

Doreen Massey, a well-known human geographer, argued that the uniqueness of a place results from its past and present interactions with other places.[8] Let's explore that in a bit more depth:

[8] Massey, D. (2005). *For space*. London: Sage Publications. When talking about place in this way, Massey is including all the living (e.g. people, animals, plants) and non-living (e.g. built environment, landscape) elements of that place. Often school geography resources distinguish between people and places, as if the place is merely the non-living container for the people, but people are as much a part of a place as any other aspect of it.

Doreen Massey on place

Places are complex and constantly changing. Think about a place you know and all the living and non-living things that make up that place – people, animals, plants, buildings, soil, hills, rivers. Now think about them in terms of past and present interactions.

- Where have these living and non-living things come from? People might have travelled in by car or walking, plants by seeds carried on the wind or by Victorian explorers.
- Where are these living and non-living things going? People travel on to other places, rocks erode and are carried away by water.

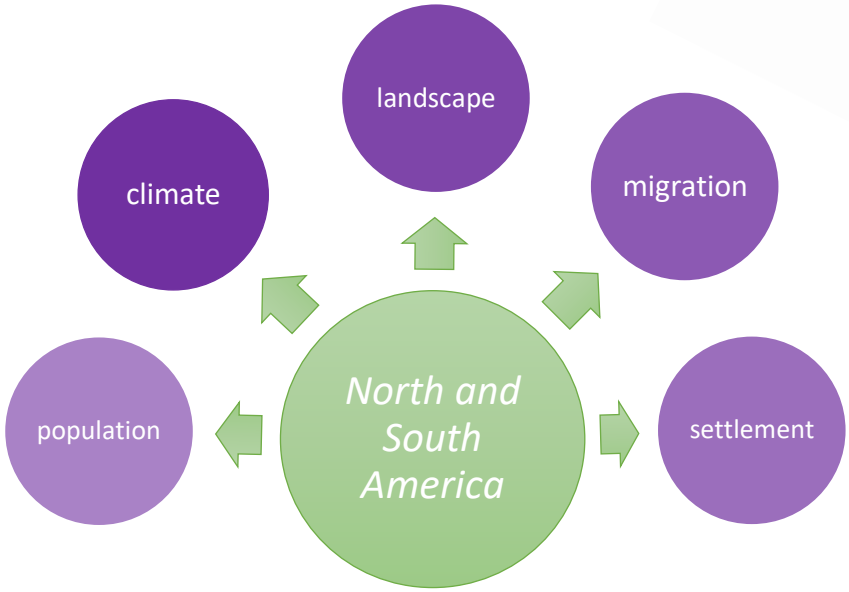
Some elements change quickly, such as when people travel in and out during the working day. Other elements change slowly, such as the erosion of stone buildings by rain.

Places have connections with some places and not with others (think of travelling around England by train – it's much easier to get to London than anywhere else!). Places are diverse in many ways – their landscapes, climates, people, buildings, vegetation and employment just for starters.

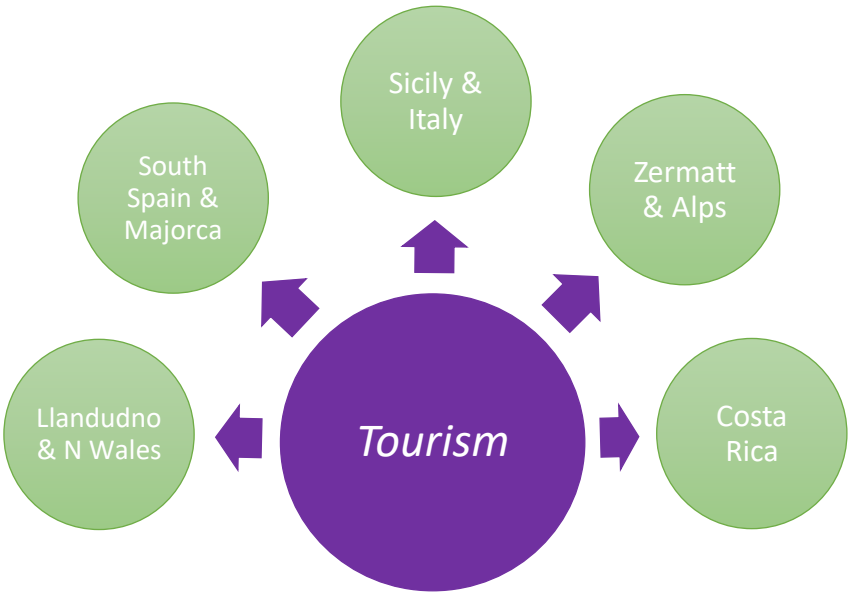
So our aim is for pupils to build both an overall locational framework and a deeper understanding of selected places, localities, regions, countries and continents. But how do we know which places to study? We must select from the massive range of possible places to study because curriculum time is limited, so we are always balancing **overview** of many places (including locational framework) and **depth** of knowledge about selected places.

As building knowledge of geographical themes involves studying real instances of places, processes and events, the Opening Worlds geography curriculum comprises **thematic** and **place-based** units of study.

Place-based units take a country, continent, settlement or region as the focus and address a variety of themes within that place (in the context of interaction with other places). For example, the **place-based** unit on *North and South America* (Year 5 Spring 2) builds knowledge of selected physical and human geography themes within that context, drilling down to national and regional contexts within Peru and Brazil. This can be represented in a diagram:



Conversely, thematic units of work centre on a substantive theme in geography (see Section 2.1), exploring that theme in a structured way and bringing in case studies of that theme in real places at a range of scales. This can be seen in the *Tourism* unit (Year 4 Spring 2), as shown on the diagram:



We have selected case studies which both illustrate the geographical theme effectively and build up a coherent view of the world. In order to ensure this coherence, pupils return regularly to certain countries and regions, gaining depth and richness in their understanding of those places and the ways that different themes in geography work out within them.

In keeping with the National Curriculum, we have prioritised the UK, Europe and North and South America for Key Stage 2, though we do draw on other parts of the world when they provide

particularly pertinent case studies and to ensure breadth of knowledge. Our **'centres of gravity'** in geography include London, Wales, UK, the Alps and Mediterranean, the Amazon and Brazil.

As with the substantive knowledge themes, we have also selected **place studies** to strengthen and reinforce place knowledge between geography, history and religion. For example:

- The *Rivers* unit in geography (Year 3 Autumn 1) includes a detailed case study of the River Indus in South Asia, which provides a locational framework and developing sense of place as a starting point for the history unit on *Indus Valley civilisation* (Year 3 Spring 1).
- Studying the various visual representations of religion in the history unit on *Christianity in Three Empires* (Year 4 Spring 2) lays a foundation of understanding about the history and culture of Ethiopia which creates readiness for an in-depth place study of contemporary *Ethiopia* in geography (Year 6 Autumn 2).

Certain 'centres of gravity' therefore resonate across our geography, history and religion curricula, including the Mediterranean (Italy and Greece), Egypt, Ethiopia and the Indus Valley.

Opportunities to explore the **local area** in which pupils live are provided through fieldwork options linked to thematic units and the Year 6 local area enquiry. General guidance on geography fieldwork is available on the website to support teachers with these. While local area and first-hand experience is an important starting point for pupils, the curriculum is also designed to move beyond the immediate to expand horizons and to create a secure and comprehensive understanding of the world(s) we live in. We therefore explore **diversity *within* and *between* places** to counter stereotypes and to develop a more nuanced understanding of the world.

Direct experience helps to build pupils' **sense of place**, which includes

both

- affective, personal response *to* a place

and

- cognitive knowledge *about* it.

By affective, personal response we mean that pupils explore the meanings which they attach to places and the way in which that experience of place forms part of our identities (for example in the *Migration* unit, Year 5 Spring 1). These ideas can be explored as part of fieldwork in the local area, but we also use a wide variety of still and moving images, and even sounds or music, to help develop pupils' **geographical imaginations** of distant places.

When navigating the idea of sense of place, we need to bear in mind that different people attach **different meanings to the same place**. One person may love the open skies and wide, flat landscape of the Fens, while another person feels exposed and uncomfortable there. One person sees 'home' as a place of comfort and acceptance, while another experiences it as a hostile environment. This diversity of meaning is acknowledged in the phrase 'senses of place'.

We must always be cautious about presenting a single view of a place as normal or normative (for example, in geography lessons, we'd avoid saying 'Isn't this landscape beautiful?' because some people might disagree). Instead, as geographers we want to explore and respect the experiences, responses and values that diverse people hold in relation to particular places.

From this short introduction to teaching about place in geography, you'll realise that place is a complex and multi-layered concept. This makes teaching about it stimulating, but also challenging!

Let's summarise the ideas we've covered so far:

1. One aim of Opening Worlds geography is to help children develop their **locational framework**. We focus on the UK, Europe and North and South America in Key Stage 2.
2. The concept of place includes location but it is also much richer and deeper than that. The Opening Worlds curriculum carefully balances **breadth** of understanding with **depth**, returning to certain 'centres of gravity' multiple times to add new layers of substantive knowledge from different themes in geography.
3. The Opening Worlds curriculum units comprise both **place studies** and **thematic studies** to help children develop rich substantive knowledge in geography.
4. Places are **diverse** both *within* and *between* themselves, so we need to attend to this diversity and avoid stereotyping when teaching about place.
5. People's response to place is more than just 'head knowledge' – geographers talk about **'sense of place'** to encompass the feelings, meanings and values people attach to place.
6. Because people are diverse, the meanings they attach to the 'same' place are also diverse, so it's also helpful to talk about **senses of place**.

Of course, these ideas and the language we've used to discuss them are not things that we would explicitly teach to children at Key Stage 2! Rather, they inform the sense of long-term direction in our curriculum planning, they inform the recurring themes we highlight in lessons and they inform our reflection on age-appropriate language which we use when discussing places with children.

2.4 Developing geographical vocabulary

An expanding domain of geographical vocabulary allows pupils to increase their capacity to understand different facets of geographical themes and places because they have such rich language with which to describe and analyse these.

Each Opening Worlds unit explicitly teaches between 20 and 40 new words. In earlier thematic units, the **geographical terms** for that theme are introduced. This set of vocabulary is augmented by **names (proper nouns)** relevant to the case studies through which the themes are exemplified. A further vocabulary type is a selection of words which (as in our history and religion booklets) enrich the accounts that help to build **children's general vocabulary**.

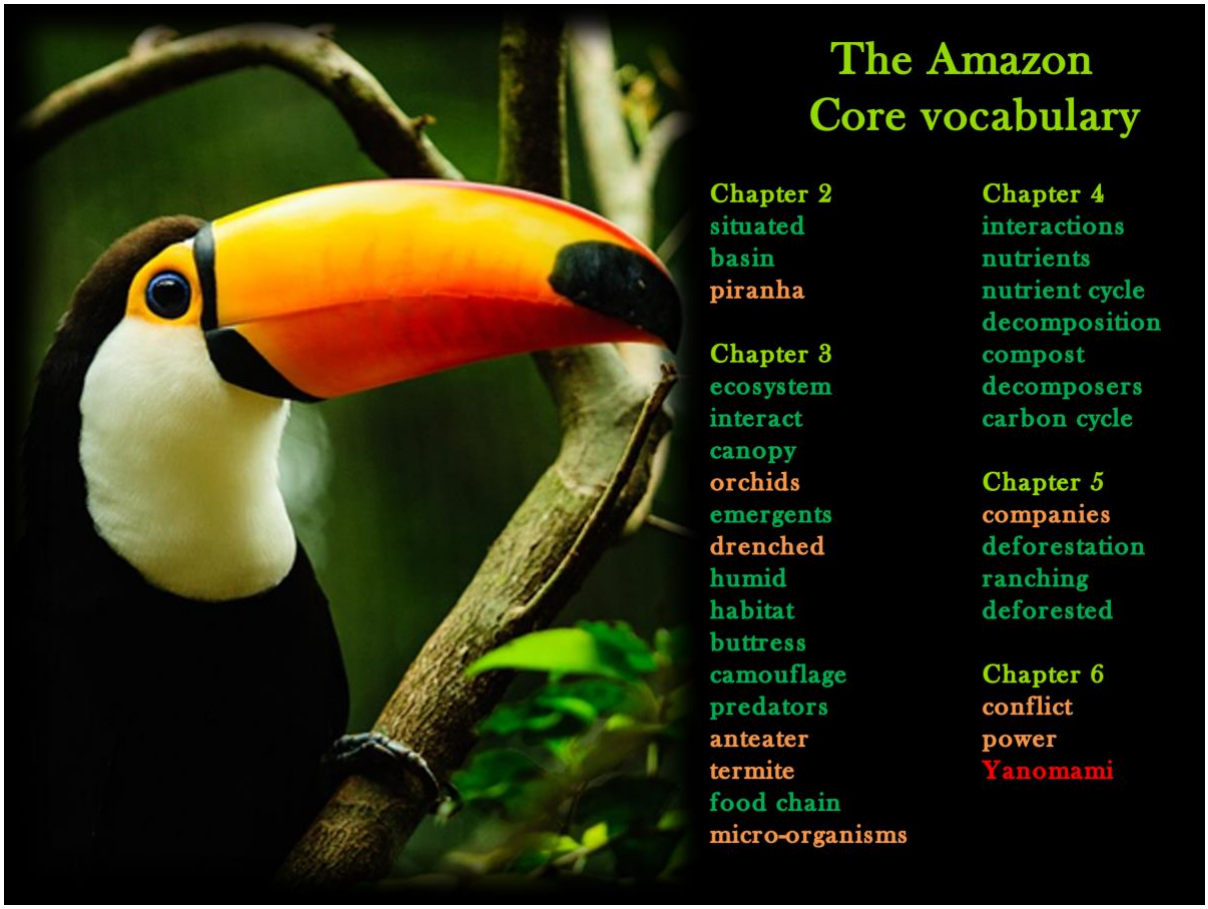
We have illustrated how these three types of vocabulary – geographical terms[9], names and general vocabulary – come together in this example from the Year 3, Rivers unit:

[9] Some vocabulary listed for these themes would also be important in science, but here the context is geography.

In Year 5, a typical list includes a greater range of specialist geographical vocabulary, but still augments this with relevant general vocabulary.

The relevant general vocabulary plays an important role within the geographical accounts, but also builds pupils' wider intellectual capital for these are words that could crop up anywhere, within and beyond the humanities. This vocabulary is particularly crucial, for example, in enabling pupils to access the richly evocative and allusive language of fiction, as well as non-fiction texts.

Let's look at another example, from Year 5. Notice again how geographical terms, names and general vocabulary blend and serve each other:



Prior introduction, deliberate practice and contextualised use of new vocabulary allows pupils to recognise that vocabulary instantly when they meet it in subsequent units, thus not crowding their working memory by having to puzzle it out, and thereby making space for learning *new* vocabulary because certain words can be taken for granted.

For example:

Pupils instantly comprehend …	'climate' in *The Amazon* (Y5 Summer 1)	'tributary' in *The Amazon* (Y5 Summer 1)	'population' in *North and South America* (Y5 Spring 2)
… because of prior introduction, deliberate practice and contextualised use in:	*Climate & biomes* (Y3 Summer 2) *Tourism* (Y4 Spring 2) *Why is California so thirsty?* (Y5 Autumn 1)	*Rivers* (Y3 Autumn 1) *Rhine & Mediterranean* (Y4 Autumn 1)	*Population* (Y4 Autumn 2) *Migration* (Y5 Spring 1)

Through repeatedly encountering themes and case studies in geography, pupils develop a progressively more detailed and precise technical vocabulary, addressing sub-classifications and new instances of phenomena.

For example:

Having learned general words such as…	'settlements' in Year 3		
….pupils steadily broaden their grasp of types of settlements with words such as:	hamlet, farmstead, village, town, city, rural, urban, coastal town, market town, conurbation, capital city *Settlements* (Y3 Spring 1)	port *Rhine and Mediterranean* (Y4 Autumn 1) seaside town *Tourism* (Y4 Spring 2)	megacity, favela *North and South America* (Y5 Spring 2)

3 How does the Opening Worlds curriculum ensure that pupils *use* all this substantive knowledge within an expanding grasp of *disciplinary* knowledge?

3.1 What is disciplinary knowledge in geography?

Compared with similar debates in history education, there is much less consensus among professionals on the nature of disciplinary knowledge in geography education.[10] When geography education specialists talk about 'concepts' other than substantive ones, they often mean very different things! For the purposes of the Opening Worlds geography curriculum, we have drawn on the extensive geography education debates on this matter and just chosen three concepts which geographers use to ask and answer questions.[11]

These apply across the broad sweep of the discipline, from human to physical geography:

[10] Ofsted (2021). *Research review series: Geography*. Available at: https://www.gov.uk/government/publications/research-review-series-geography/research-review-series-geography#curriculum

[11] Our choice and construction of these three aspects of disciplinary knowledge was inspired by the work of the late Doreen Massey in '*For space*'.

- Change over time[12]
  Think of a place you know. Everything in it is changing. The location may stay basically the same, but the living and non-living elements of that place come and go.[13] Some stay for only a few moments, others stay in that location for years, but the particular combination of living and non-living things is constantly altering. Settlements, landscapes, biomes and economies are all in a constant state of change. Geographers are interested in the nature, rate and extent of that change, from the past to the present and into the future. For example, in the *Coastal Processes* unit (Year 4, Spring 1), we learn about the way that the shape of the coastline changes over time as cliffs crumble and bays deepen.

  Some of our disciplinary questions in the synoptic tasks therefore require pupils to discern, describe or analyse **change over time.**

- Diversity as variation over space
  Difference is the only reason that we can experience space at all! Difference is the only reason that we can navigate space, too. As we move from one place to another, some things stay the same and others are different. In other words, we make sense of geographical phenomena through a constant process of comparison. Diversity in geography is broader than cultural diversity. So important though cultural diversity is, we need to be clear that we are talking about a much broader concept here, and a specifically geographical one. Diversity in this sense includes variation in physical and human environments. Geographers are interested in diversity *within* and *between* places (countries, farms, settlements, rainforests, oceans, regions). For example, in the *North and South America* unit (Year 5, Spring 2) we learn about diversity within climate in South America.

  Some of our disciplinary questions in the synoptic tasks therefore require pupils to discern, describe or analyse **diversity as variation over space.**

- Interaction
  The world is full of links and connections. Think of the way that the place you're in is linked to other places through communications, trade, physical processes and atmospheric cycles. Ecosystems, climate systems and the water cycle are made up of stores and flows, as we see in the Year 5 *Amazon* unit (Summer 1).[14] We can study interactions in three contexts: between the human and physical worlds (such as the effects of coastal erosion on a coastal settlement); within the human world (such as trade); and within the physical world (such as food chains in an ecosystem).

[12] Sometimes people talk about change over space, for example, we can see the landscape 'changing' as we go on a journey, but really this is referring to diversity – the landscape varies from place to place and we notice the differences as we move. For the purposes of this curriculum, we refer to change only over time.
[13] Though even the ground under our feet shifts a few millimetres a year as the tectonic plates move.
[14] This way of thinking about the world, as stores and flows, is called systems theory.

Some of our disciplinary questions in the synoptic tasks therefore require pupils to discern, describe or analyse **interaction.**

Some examples of questions that geographers ask and answer about these aspects of disciplinary knowledge are shown in the table:

Change	*Diversity*	*Interaction*
• What is the nature, rate, and extent of change? • How was this place or environment different in the past? • How might it be different in the future? • Which future paths are possible/preferable/ probable?[15]	• How do the characteristics of this place or environment vary over space? • How is this phenomenon distributed? • What are similarities and differences over space? • What are similarities and differences **within** and **between** places or environments?	• How and why are different places, phenomena or events connected and not connected? • How and why are places interdependent? • What are interactions like within the physical world? …within the human world? …between the human and physical? • How and why does one place, phenomena or event **affect** another? • Why does change happen? By what **processes**? • Are there inequalities in the interactions between places?[16]

These disciplinary emphases are completely consistent with England's National Curriculum for geography, which states in the 'Purpose of Study':

> 'Teaching should equip pupils with knowledge about **diverse places, people, resources and natural and human environments,** together with a deep understanding of **the Earth's key physical and human processes.** As pupils progress, their growing knowledge about the world should help them to deepen their understanding of **the interaction between physical and human processes**,

[15] This question is inspired by David Hicks' work on futures in development education https://think-global.org.uk/wp-content/uploads/dea/documents/dej_9_1_hicks.pdf

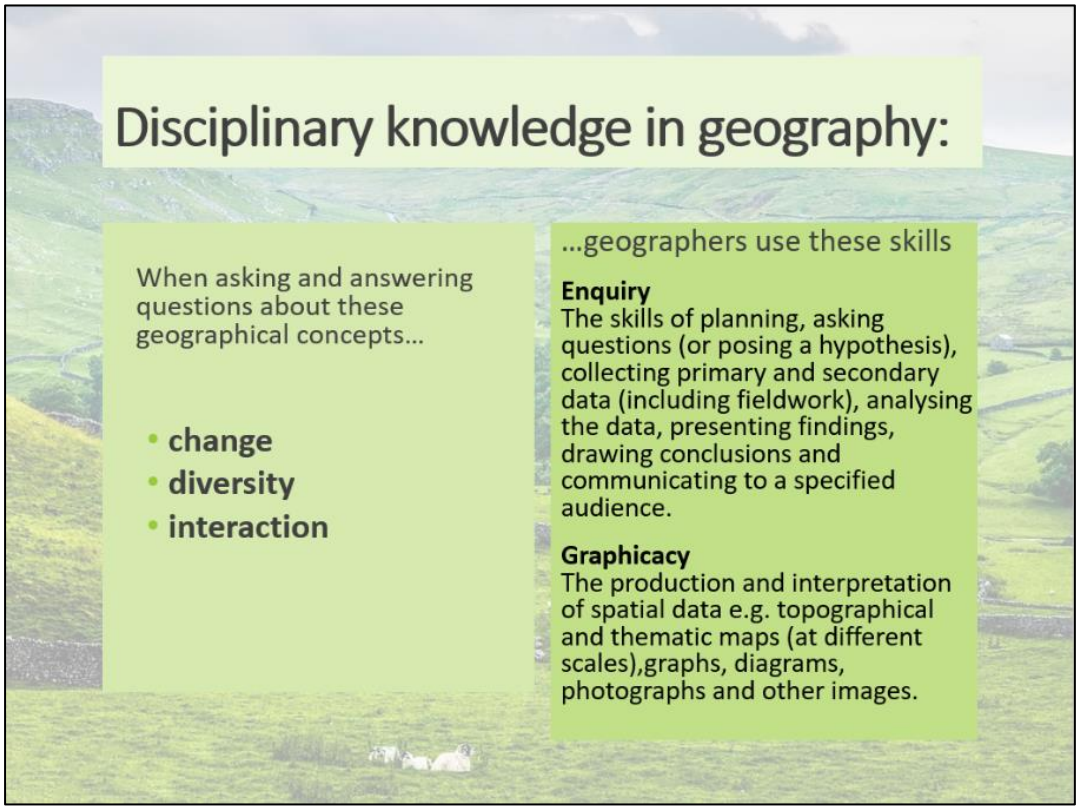
[16] Doreen Massey, a well-known geographer, used the term 'power geometries' to express the way that links often have an uneven power balance over space. Some places (and the people in them) have more power than others. We see this most obviously in human geography topics such as trade or conflict. Of course, we wouldn't use the term 'power geometries' with children, but it's a helpful term when we think and communicate as teachers. To think about inequalities in interaction is good preparation for Key Stage 3, when, in strong secondary geography departments, pupils will be discussing such ideas as 'geometries of power' explicitly.

and of the formation and use of landscapes and environments. Geographical knowledge provides the tools and approaches that explain how the Earth's features at different scales are shaped, interconnected and change over time.'

All these ideas can be explored over a range of spatial scales, from the local to the global. The power of scale is in 'zooming up and down' from one scale to another. We understand an issue differently as we gain new knowledge at different scales. For example, in Year 5:

- we learn about interactions with the physical environment of the Amazon rainforest in *The Amazon* (Year 5 Summer 1);
- then we consider how the Amazon affects and is affected by the wider world in *Interconnected Amazon* (Year 5 Summer 2).

In all the training that Opening Worlds provides on the disciplinary, this is always integrated and clarified by means of one, simple slide (just as it is in history and religion):



So geographers learn about the world by asking questions concerning change, diversity and interaction about themes, places and spaces at different scales. Geographers use skills of enquiry and graphicacy to answer these questions. These skills are explored further in Section 4.

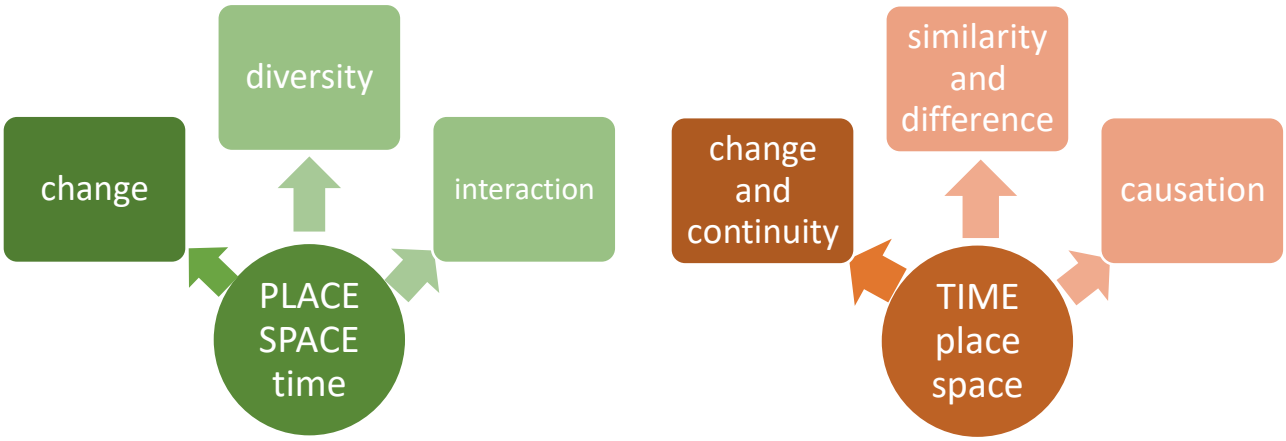
Although we often choose just *one* disciplinary concept for particular focus in the geography curriculum at any one time, these ideas are intertwined within the working of human and physical environments. This means that we will 'bump into' each concept at some point within most units.

In particular, interaction and change are closely linked. This is because interaction almost always causes change. For example, in **the Year 5 *Migration* unit, we learn about at how people's lives change when they move from one country to another.**

111

You will see that there are both similarities and differences between the disciplinary concepts in geography and history. Let's look now at why the concepts for history and geography are different.

If we remember that **space and place** are central in geography, we see how diversity and interaction over space flow from that (left-hand diagram). If we remember that **time** is central in history, we see how change and continuity over time flow from that (right-hand diagram). However, geography and history also have some similarities. Geography is <u>also</u> interested in time, and the disciplinary concept of change (over time) flows from that. History is <u>also</u> interested in space, so similarity and difference operates over space in history (comparing conditions in two contemporary cities) as well as over time (comparing government in one civilisation with another from a different century).



Geography *History*

In history, **significance** is also part of disciplinary knowledge. The equivalent in geography is **perception** (how people experience and respond to a place within their own thinking) and **representation** (how they externalise that perception). For Key Stage 2, we have chosen not to foreground this aspect of disciplinary knowledge in the geography curriculum, but we do touch on it in certain themes (for example migration and conflicts over land use) and we use it to inform certain aspects of pedagogy (for example when we reflect on sense(s) of place and use selected lenses on place, including as part of fieldwork).

3.2 How do children make progress in disciplinary knowledge in geography?

Following the experience of the history education community over the last 15 years, we are well advised to avoid turning disciplinary knowledge into 'ladders' for progression. Whatever you do, don't try to create some hierarchy of orders of difficulty and put it on a ladder!

Just as in history, we should certainly avoid ever assuming that a hierarchy of difficulty can be created with verbs (e.g. imagining that 'identify', 'describe', 'compare', 'analyse' and so on are some journey of progress into greater difficulty). This quickly unravels into nonsense, just as it does in history, but it is still quite a widespread misconception!

So many have tried this and it is superficially impressive, but invariably a very misleading lie. We carefully avoid this in Opening Worlds.

This is not to say that what pupils do does not increase in complexity. It certainly does! But you can't represent this with a set of verbs describing skills. What is actually describing and fostering progression in disciplinary geography is something quite different. It is pupils' cumulative encounters with:

- a growing variety of types of geographical questions and issues within each category (for example, more questions about interaction, worded in different ways, with different analytic demands and different scopes of application, so that pupils start to anticipate different types of connections between the human/human, human/physical and physical/physical worlds, so that they start to become aware of the power-full nature of these links, so that they expect interaction to lead to change…)
- a growing variety of maps, diagrams, graphs, photographs and other images which they can interpret (and sometimes create) to ask and answer geographical questions.

Just as with vocabulary, these accumulate, so that pupils *recognise familiar* types of patterns, interconnections, effects and impacts which they have seen before and are able quickly to *discern contrasts* between prior encounters and new ones.

In other words, just as with substantive knowledge, when it comes to knowing how the discipline works to explore and understand the world (including skills of enquiry and interpretation and creation of visual representations) *the curriculum* is the progression model.

Alongside this, over time, pupils' experience in recognising and predicting change, in describing and evaluating diversity, in noticing and expecting interactions becomes more sophisticated along with the depth, range and complexity of substantive content that pupils are dealing with and the vocabulary that they need for it. *So increased demand in disciplinary questions is profoundly enabled by pupils' increased substantive knowledge.*

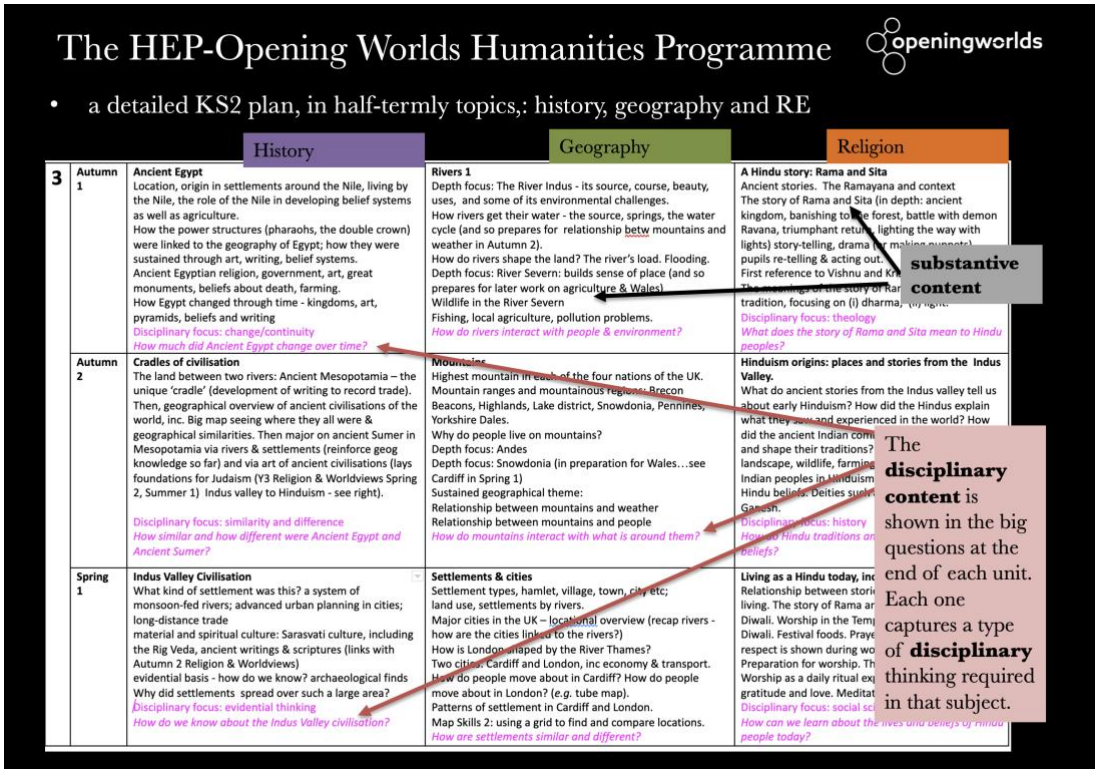
The Opening Worlds curriculum systematically arranges these successive encounters, with deliberate revisiting of old types and controlled introduction of new types, in two main ways.

- The first way is highly visible and trackable. It is present in the synoptic tasks.
- The second is continuous and immanent. It can be seen on almost every page in the text of the booklets.

We will now illustrate each of these.

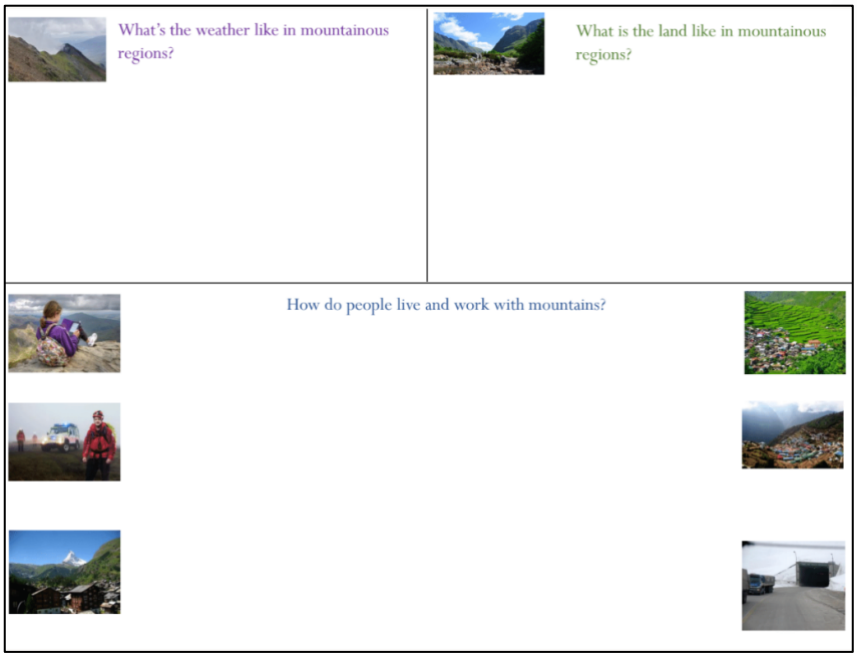
3.2.1 Disciplinary questions in the geography synoptic tasks

In the full curriculum plan, you can see successive encounters with interaction questions, successive encounters with diversity questions, and so on.



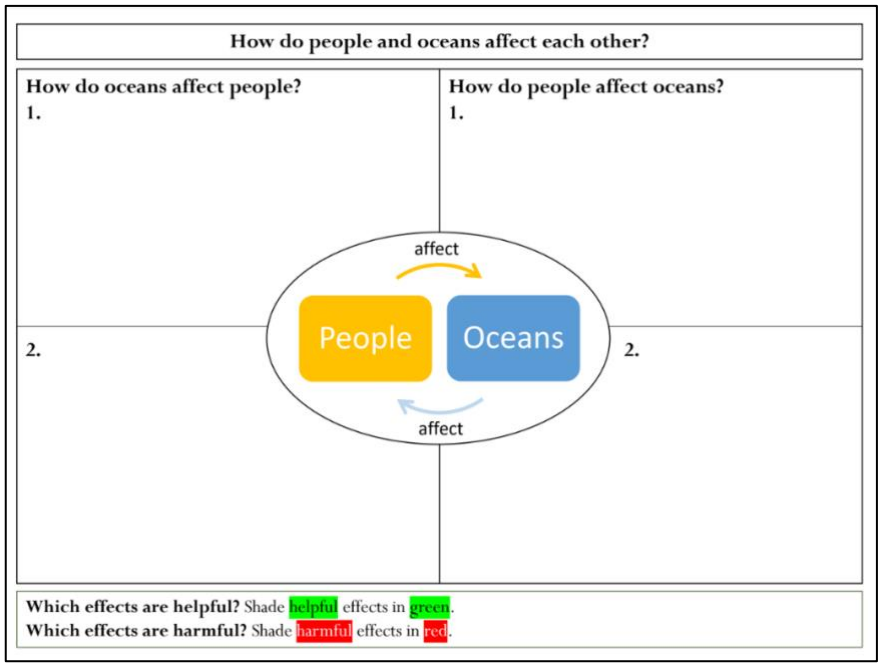
Here is one example of repeated encounters with interaction, from Year 3. In this case, the interaction is between people and a physical environment, first mountains and then oceans. In the mountains synoptic task (Year 3, Autumn 2), pupils start by recalling characteristics of mountainous environments (effects of altitude on weather and types of landscape), then they move on to the different ways in which people interact with the mountainous environment (tourism, sporting activities, farming, transport links…) including how people adapt the landscape to maximise its use (e.g. terraces for farming). In their writing, pupils communicate a set of simple interactions, for example, 'people use mountains for tourism, e.g. skiing holidays', 'people make terraces in some mountains so that they can farm'.

Interaction in the Year 3, Autumn 2 Mountains synoptic task:



By Year 5, the interaction focus is more complex and more explicit in the synoptic task. Children are by now familiar with interpreting flow diagrams, and a central diagram reminds them of the two-way interaction between people and their environment. By focusing on just two examples of interactions in both directions, pupils can write more extended answers using the substantive knowledge they have gained in the unit. For example, 'People affect oceans when they use plastic then throw it away, then some of it ends up in the ocean and sea creatures, such as turtles, eat it' or 'Oceans affect people because oceans regulate temperature by ocean currents moving warm and cold water around. This makes coastal climates less extreme than inland.'

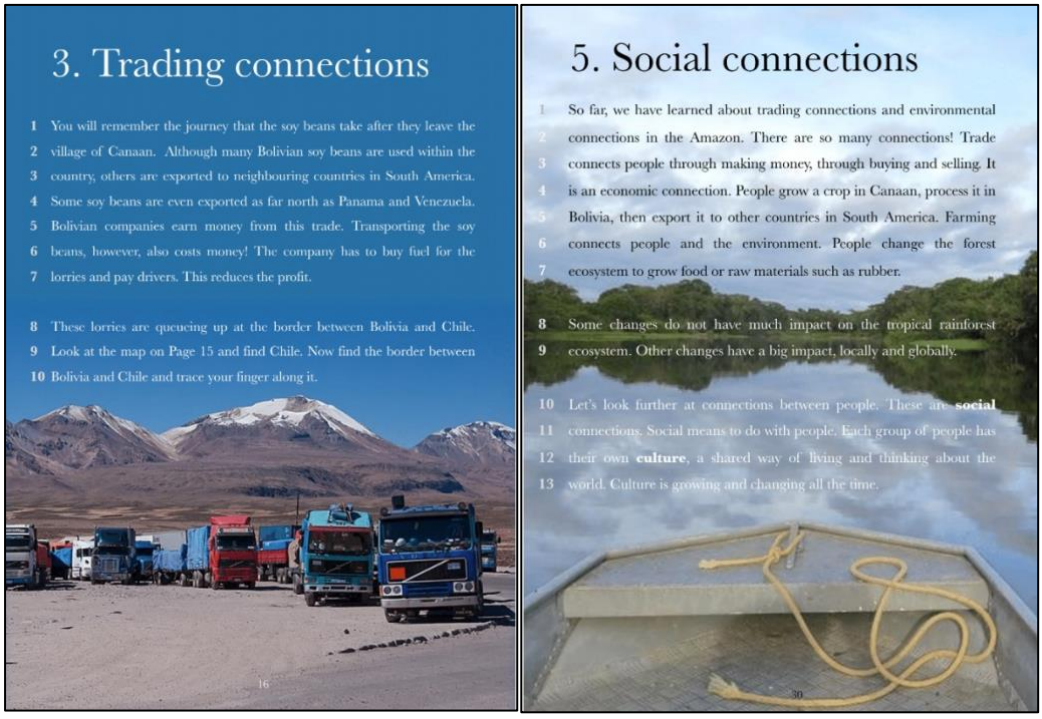
Interaction in the Year 5, Autumn 2 Oceans synoptic task:



3.2.2 References to the disciplinary in the geography booklet text

In any booklet, you will see embedded reference to change, diversity and interaction. These are a natural part of all geographical themes. For example, in the *Tourism* unit (Year 4, Spring 2), we provide an introduction to **diversity** in tourism (with case studies at a range of scales, including seaside holidays in Llandudno, skiing holidays in the Alps and sunshine holidays in Majorca). Then we give an overview of **change** in tourism in the UK over the past 150 years. We also consider the **interactions** between tourists and the environment, including an introduction to sustainable tourism in Costa Rica.

In the later units, we sometimes take an extended focus on one aspect of disciplinary knowledge, for example, in the *Interconnected Amazon* unit (Year 5 Summer 2), the focus for the whole unit is **interaction**. We move from interactions at the **local** scale (building on knowledge of a farming community in Bolivia developed in the previous unit) to interactions at the **regional** and **international** scales, highlighting trade, environmental connections (including the carbon cycle) and social connections (including an introduction to globalisation). The unit culminates in a mini-enquiry in which pupils consider the connections their own class has (or doesn't have) to the Amazon.



Interconnected Amazon (Year 5 Summer 2)

4 How does the Opening Worlds curriculum develop pupils' geographical skills?

Geographical skills are the methods which geographers use to find out about the world. We have classified them into two broad groups of skills (which, in practice, overlap):

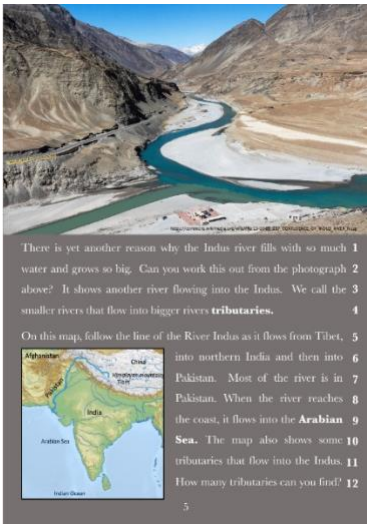
- geographical enquiry
- graphicacy

The range of skills for **geographical enquiry** include asking questions, finding data, analysing data and communicating findings.

Geographers put particular emphasis on finding out about the world through creating and interpreting different types of maps, photographs, graphs, diagrams and other types of spatially-located data. Sometimes this is called **graphicacy**.[17]

Skills from each group are used in geographical fieldwork. Geographers use fieldwork to investigate the world around them *directly.*

In Opening Worlds materials, geographical skills are integrated throughout the booklet and PowerPoint slides for each unit. This is important because geographical skills are never an end in themselves – their aim is to create or communicate geographical knowledge. Therefore, whenever possible, pupils should learn to use and to practise them as an integral part of learning geographical knowledge.


There is yet another reason why the Indus river fills with so much water and grows so big. Can you work this out from the photograph above? It shows another river flowing into the Indus. We call the smaller rivers that flow into bigger rivers **tributaries.**

On this map, follow the line of the River Indus as it flows from Tibet, into northern India and then into Pakistan. Most of the river is in Pakistan. When the river reaches the coast, it flows into the **Arabian Sea.** The map also shows some tributaries that flow into the Indus. How many tributaries can you find?

5

For example, in the *Rivers* unit (Year 3 Autumn 1), pupils use a range of photographs and maps of the River Indus to find out about how the river changes from source to sea. They learn and practise geographical skills in order to develop knowledge about the world and how it works.

Just as with knowledge, skills need explicit teaching and regular practice. Only thus will they become integrated into learners' long-term memories. The first time a new skill is introduced, it is taught and reinforced in small steps. Then it is practised regularly in a range of different contexts.

The Opening Worlds curriculum follows a similar progression in geographical skills as the Geography National Curriculum, though we introduce thematic mapping and satellite images at appropriate points in Key Stage 2:

Geographical skills in the National Curriculum

[17] https://www.utpjournals.press/doi/abs/10.3138/C7Q0-MM01-6161-7315

	KS1	KS2	KS3
Using maps	• Use world maps, atlases, globes to identify countries, continents and oceans studied • Use simple compass directions (NESW) and directional language (near/far, left/right) to describe the location of features and routes on a map • Recognise landmarks and basic human/physical features on plan maps • Describe the location of features and routes on a map	• Use maps, atlases, globes and digital/computer mapping to locate countries and describe features studied • Use the 8 points of the compass, four and six-figure grid references, symbols and key (including the use of OS maps) to build their knowledge of the UK and the wider world	• Build on their knowledge of globes, maps and atlases and use these geographical tools routinely in the classroom and the field • Interpret OS maps in the classroom and the field, using grid references and scale, topographical and other thematic mapping • Using GIS to view, analyse and interpret places and data
Making maps	• Devise a simple map • Use and construct basic symbols in a key	See fieldwork	• Using GIS to view, analyse and interpret places and data
Using photographs	• Recognise landmarks and basic human/physical features on aerial photos	(assume continues)	• Using aerial and satellite photographs
Fieldwork	• Use simple fieldwork and observational skills to study the geography of their school and its grounds and the key human and physical features of its surrounding environment	• Use fieldwork to observe, measure and record the human and physical features in the local area using a range of methods including sketch maps, plans and graphs and digital technologies	See using maps, also • Use fieldwork in contrasting locations to collect, analyse and draw conclusions from geographical data, using multiple sources of increasingly complex information

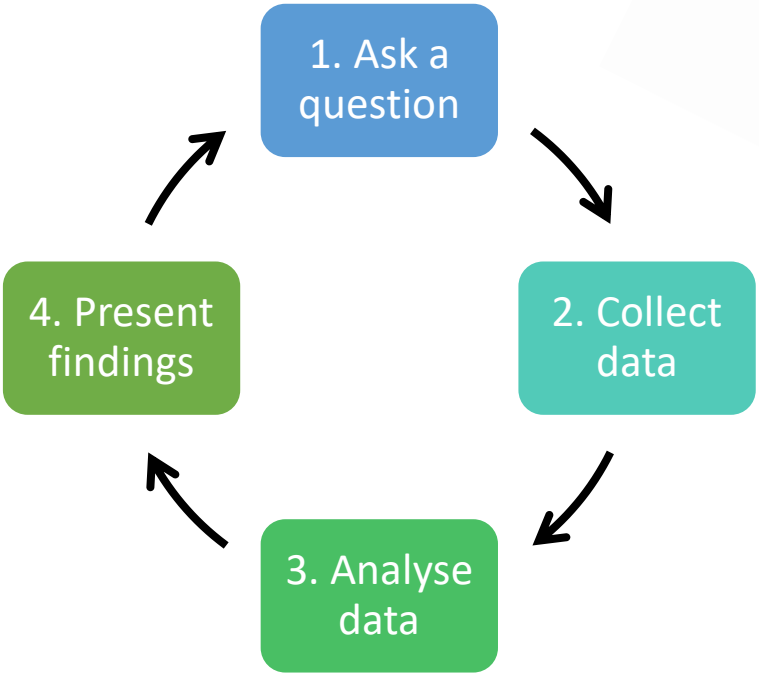
Again, the curriculum itself is the progression model. More detailed information about the introduction and practice of skills can be found in Geographical skills: A guide for Opening Worlds teachers

4.1 Enquiry – asking and answering geographical questions

Geographical enquiry involves asking questions, collecting data, analysing data and communicating findings.

Enquiry in geography has some similarities to scientific method but is distinct in its focus (always having a place/space dimension) and in the breadth of its data collection (selecting from a wide range of numerical, visual and word-based methods of collecting data).

In Opening Worlds materials, the teaching of geographical enquiry skills is integrated in different units such as asking questions in *Migration* (Year 5 Spring 1) interpreting tables of figures in *Deserts* (Year 4 Summer 2) and using a questionnaire in *Interconnected Amazon* (Year 5 Summer 2). All these skills come together in the Year 6 Summer term enquiry.



The enquiry process in geography

Pupils communicate their findings in various ways including short and extended written text, graphs, diagrams, annotated images. Short activities embedded in the lesson materials provide opportunities (with guidance to teachers) for pupils to practise communicating their knowledge in different ways, and the synoptic tasks give a more extended occasion for this.

4.2 Graphicacy – creating and interpreting visual representations

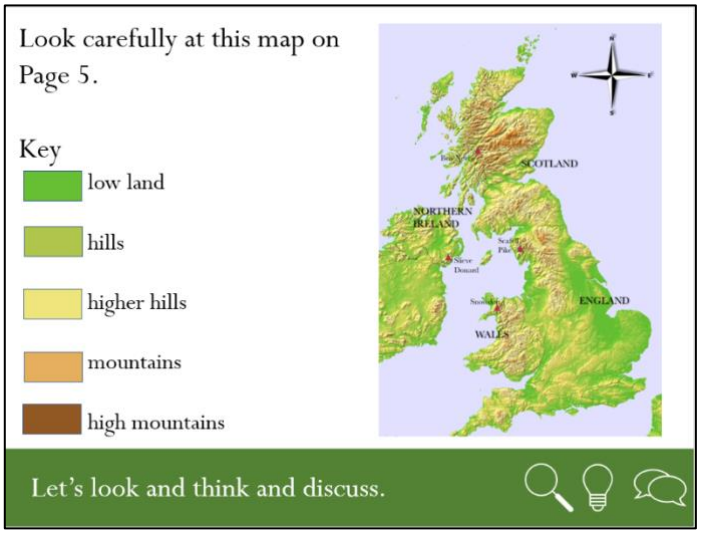
Geography uses a wealth of visual representations of the world and spatially-located data. Creating and interpreting visual representations is an important geographical skill. These include:-

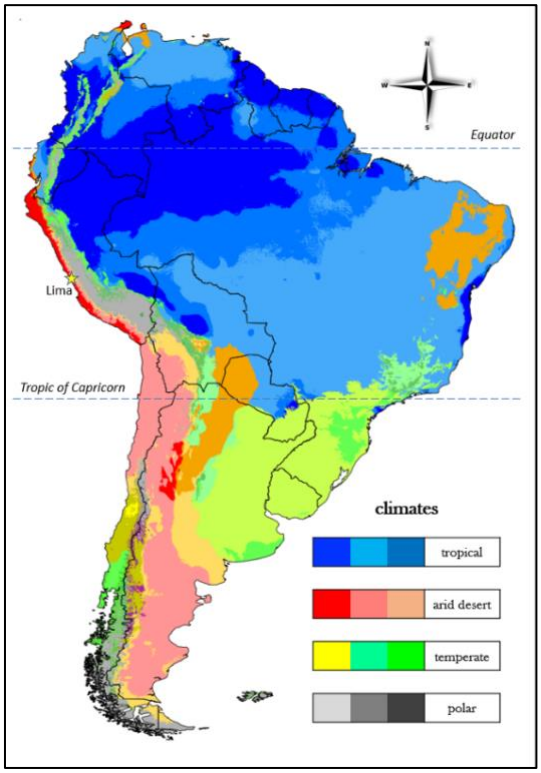
- topographical maps[18]
- thematic maps[19]
- plans (large-scale maps)
- photographs (ground and aerial)
- satellite images
- graphs and charts
- diagrams, for example flow diagrams
- sketches and other pictures

These visual representations become more complex as the curriculum progresses and our supporting materials equip teachers to use them effectively. For example, the left-hand image shows a simple

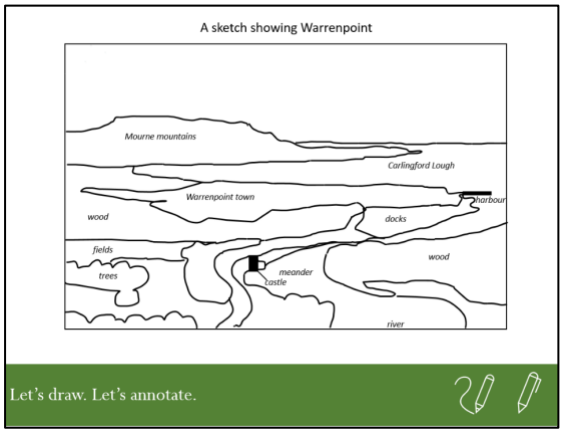
[18] Maps that show the physical landscape and human features, for example Ordnance Survey maps in Great Britain.
[19] Maps that focus on one aspect of geography, such as climate, population density or natural hazards.

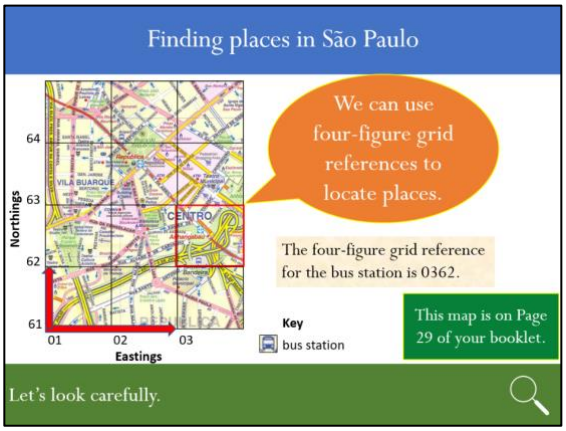
relief (topographical) map from Year 3 (Year 3 Autumn 2 *Mountains*) while the right-hand image shows a more complex thematic map showing climate zones from Year 5 (Year 5 *North and South America*).



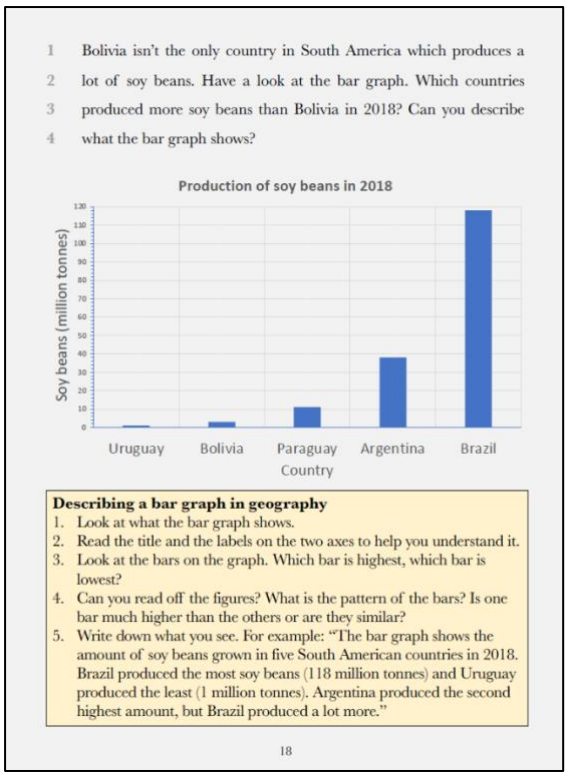


The curriculum gives pupils opportunities to interpret these representations and, where appropriate, to practise producing them. Over time, students build up a toolbox of ways of representing spatially-located data. These opportunities are carefully introduced and scaffolded through tasks and guidance for the teacher, available on lesson resources. Later, pupils have repeated opportunities to practise these skills and to become proficient in them. In Key Stages 3 and 4 they will become more independent in selecting which representation is most appropriate for a particular set of data. Different types of graphs are introduced at a pace consistent with the Maths National Curriculum.





Learning to draw a field sketch (Year 5 Spring 1) and to give four-figure grid references (Year 5 Spring 2)



1 Bolivia isn't the only country in South America which produces a
2 lot of soy beans. Have a look at the bar graph. Which countries
3 produced more soy beans than Bolivia in 2018? Can you describe
4 what the bar graph shows?

Production of soy beans in 2018

Describing a bar graph in geography

1. Look at what the bar graph shows.
2. Read the title and the labels on the two axes to help you understand it.
3. Look at the bars on the graph. Which bar is highest, which bar is lowest?
4. Can you read off the figures? What is the pattern of the bars? Is one bar much higher than the others or are they similar?
5. Write down what you see. For example: "The bar graph shows the amount of soy beans grown in five South American countries in 2018. Brazil produced the most soy beans (118 million tonnes) and Uruguay produced the least (1 million tonnes). Argentina produced the second highest amount, but Brazil produced a lot more."

18

Learning to describe a bar graph in geography (Year 5 Summer 2, Interconnected Amazon)

We also encourage the use of atlases, globes and, when appropriate, Ordnance Survey maps. We signpost such opportunities in our lesson resources. It is important that children understand the challenges involved in moving from the curved surface of the Earth to the flat surface of a map. Some degree of distortion (stretching, compressing or cutting) is always involved.

Moreover, there is no one 'correct' view of the Earth. Although in the UK we are used to seeing world maps with the UK in the centre, this is only one possible map projection. As teachers, we need to select map projections that are accessible for our children and appropriate for the data being shown. For example, when we are studying plate boundaries (Year 4 Summer 1 *Earthquakes*), we use a Pacific-centred world map because it is effective for showing the Pacific 'Ring of Fire', a linear pattern of volcanoes and the sites of major earthquakes that follows the edge of the Pacific plate.

4.3 The role of fieldwork

Fieldwork is going outside the classroom as part of learning geography. We can do fieldwork in the school grounds, in the local high street, local farmland, as a day trip to a contrasting environment in our region, further away within the UK or even overseas. We might go on a fieldtrip to somewhere we already know, but with a new purpose: to find out, or to experience, something about our world to contribute to ongoing learning in geography.

We recommend that children participate in geography fieldwork at least twice during Key Stage 2, and, ideally, every year. It's important to note that fieldwork does not need to be time-consuming, and nor does it need to be expensive. At Key Stage 2, the expectation is that fieldwork will be carried out locally, probably within walking distance of your school gates. Of course, if funding and time permit a day trip, perhaps to a contrasting environment such as a coastal or urban area, that is ideal, but we

understand this may not be possible in all contexts. In the fieldwork guidance document, available on the Opening Worlds website, we provide guidance and sample materials for fieldwork opportunities connected with the following units:

- Year 3 *Rivers*
- Year 3 *Settlements*
- Year 4 *Coastal processes*
- Year 4 *Tourism*
- Year 5 *Interconnected Amazon* (connections between your locality and other places)

In Year 6 Summer, a longer enquiry unit involves fieldwork in the local area, or further afield. This is a flexible opportunity to support your context and interests. It supports and reinforces knowledge of geographical themes, meshing this with knowledge of a place of your choosing. It is also a good opportunity to develop and reinforce Ordnance Survey map skills.