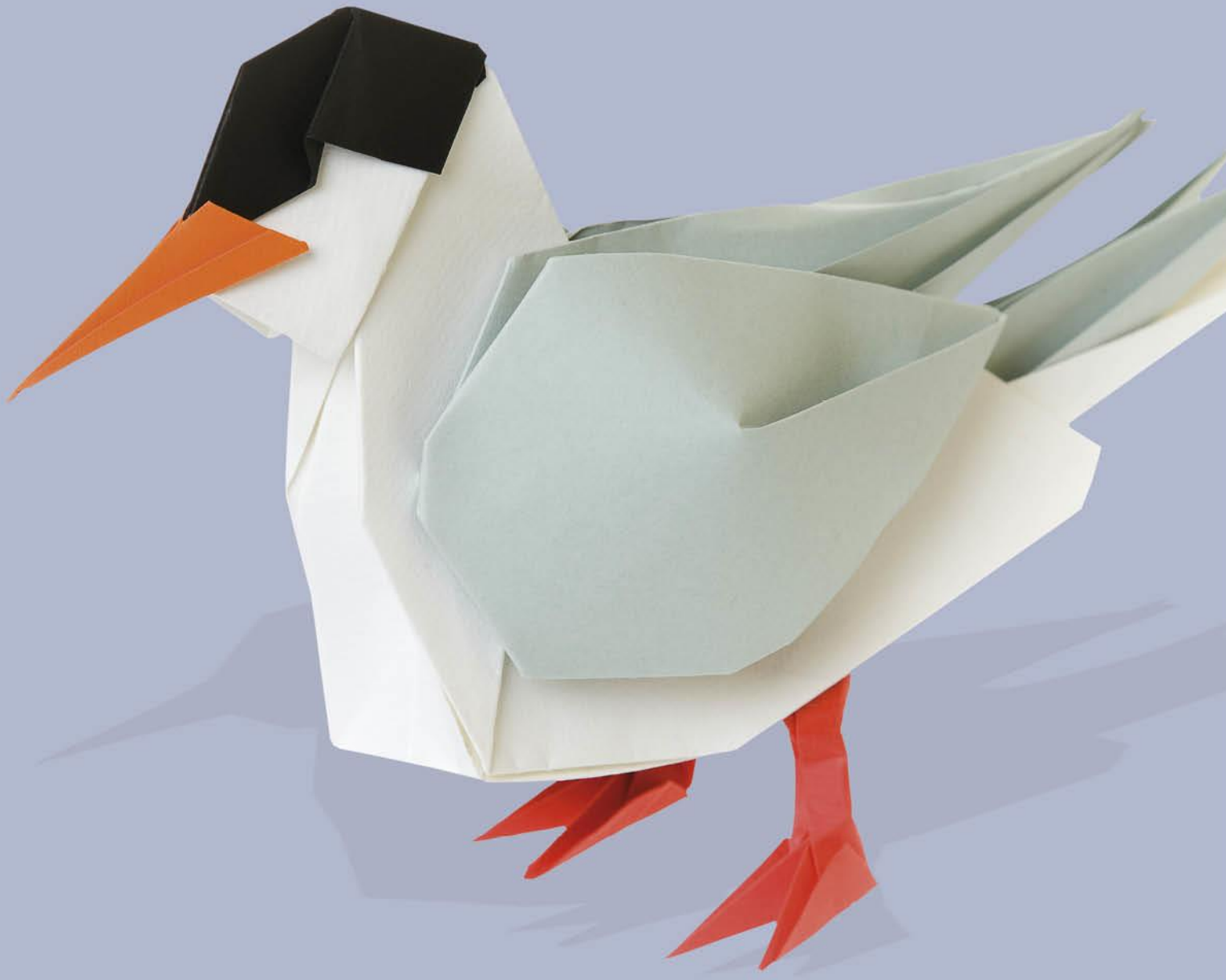
edexcel

Fieldwork Planner and Guide



AS and A level Geography

Pearson Edexcel Level 3 Advanced GCE in Geography (9GE0)

ALWAYS LEARNING

PEARSON

Contents

(1) Introduction

This in-depth guide provides both the theoretical underpinning and targeted, practical advice for conducting fieldwork for the 2016 Edexcel AS and A level Geography Specifications. It also provides guidance on how to prepare students for the Independent Investigation at A level as well as the AS fieldwork exam questions.

Some of the material has been created collaboratively, working with different partners such as the Field Studies Council (FSC), as well as using ideas and work from publications from the Geographical Association (GA) and RGS with IBG.

It is worth noting that in a recent publication, Lambert & Reiss (2014) celebrate the wider benefits of fieldwork. These are summarised in Figure 1 below, from the perspective of benefits for students.

Application and evaluation of knowledge and understanding	• Develops skills in 'big data', e.g. using passenger data for a local rail network • Helps you to handle data and develop statistical understanding • Helps with skills of literature research and selection of material; can develop synthesis skills • May help with technology skills, e.g. spreadsheet manipulation or analysis using GIS
Developing 'deeper' learning	• Helps 'see' things differently • Encourages caution and reflectivity in data analysis, as well as taking geographical meaning • Enables critical thinking and the ability to challenge existing models and assumptions • Helps with skills of reasoning as well as geographical curiosity
Social dimensions	• Helps foster independent learning • Creates an atmosphere for co-operation in problem-solving • Teaches the skills of procedure which will be transferable to other situations and subjects, e.g. following an enquiry-based process • Increases awareness of ethical considerations as part of the enquiry process, e.g. your impacts on a local environment.

Figure 1: The wider benefits of fieldwork
Source: adapted from Lambert and Reiss (2014) http://www.field-studies-council.org/media/1252064/lambert-reiss-2014-fieldwork-report.pdf

(2) Fieldwork requirements and support

a. AS (2-day requirement, preparing for written exams)

Fieldwork planned at AS needs to be carefully considered in terms of developing progression from GCSE, not only in skills, but also in terms of approach and topic focus wherever possible. Students should be encouraged to take increased responsibility for the fieldwork planning and design so that this experience is seen as a pathway to the full GCE.

At least **two days** of fieldwork (in total) relating to processes in physical and human geography need to be undertaken.

Some schools may however may want to deliver additional fieldwork to support and develop other aspects of learning, including: general fieldwork competencies, literature research, group-working and data-processing skills. All of these will help prepare and up-skill students for the independent investigation as well as providing context and relevance to other aspects of the Edexcel AS course.

The **physical geography** fieldwork is focused on investigating **either** glacial **or** coastal landscapes (processes, management aspects).

The **human geography** fieldwork is focused on **either** regenerating places **or** diverse places and can be completed in **either** urban or rural locations that might be appropriate.

The AS specification has clear fieldwork pathways which make it easier for centres to plan and manage their fieldwork. These must then be managed to form a meaningful link to assessment. There are eight stages which form a fieldwork pathway (Figure 2), based on page 55 of the AS Specification. Students are required to understand and be familiar with all aspects of the AS pathway.

Stage	Fieldwork skills description (fieldwork competency)
1	Identify appropriate field research questions, based on their knowledge and understanding of relevant aspects of physical and human geography.
2	Undertake informed and critical questioning of data sources, analytical methodologies, data reporting and presentation, including the ability to identify sources of error in data and to identify the misuse of data.
3	Understand how to observe and record phenomena in the field and be able to devise and justify practical approaches taken in the field, (including frequency/timing of observation, sampling, and data collection approaches).
4	Demonstrate knowledge and understanding of how to select practical field methodologies (primary) appropriate to their investigation.
5	Demonstrate knowledge and understanding of implementing chosen methodologies to collect data/information of good quality that is relevant to the topic of investigation.
6	Demonstrate knowledge and understanding of the techniques appropriate for analysing field data and information and for representing results, including GIS, and show ability to select suitable quantitative or qualitative approaches and to apply them.
7	Apply existing knowledge and concepts to identify, order and understand field observations.
8	Show the ability to present and write a coherent analysis of fieldwork findings and results in order to justify conclusions as well as to interpret meaning from the investigation, including the significance of any measurement or other errors.

Figure 2: AS Fieldwork skills and stages in the 'enquiry pathway'

Note – stages are based on Geography GCE AS and A level subject content December 2014 Reference: DFE-00693-2014 © DfE

b. A level (4-day requirement, preparing for Non-examination assessment)

Fieldwork planned at A level needs to be carefully considered in terms of developing progression from GCSE and AS, not only in terms of skills, but also in terms of design, methodology and choice of environment or location.

At least **four days** of fieldwork (in total) in both a physical and human context are specified. This might include a small amount of time which is included for supervised or unsupervised individual work (see Fieldwork delivery models). Fieldwork can be undertaken on a day-trip or residential basis, or a combination of the two.

Some centres may however may want to deliver more fieldwork to support and develop other aspects of learning, including: general fieldwork competencies, literature research and data-processing skills. All of these will help prepare and up-skill students for the independent investigation as well as providing context and relevance to other aspects of the GCE course.

The A level specification has a clear fieldwork and enquiry pathway which make it easier for teachers and students to plan and manage their fieldwork, as well as recognising the meaningful link to assessment. The following eight stages form the A level fieldwork pathway (Figure 3), based on page 93 of the A level Specification.

Stage	Fieldwork skills description (fieldwork competency)
1	Research relevant literature sources and understand and write up the theoretical or comparative context for a research question.
2	Undertake informed and critical questioning of data sources, analytical methodologies, data reporting and presentation, including the ability to identify sources of error in data and to identify the misuse of data.
3	Understand how to observe and record phenomena in the field and be able to devise and justify practical approaches taken in the field, (including frequency/timing of observation, sampling, and data-collection approaches).
4	Demonstrate knowledge and understanding of how to select practical field methodologies (primary) appropriate to their investigation.
5	Demonstrate knowledge and understanding of implementing chosen methodologies to collect data/information of good quality that is relevant to the topic of investigation.
6	Demonstrate knowledge and understanding of the techniques appropriate for analysing field data and information and for representing results, including GIS, and show ability to select suitable quantitative or qualitative approaches and to apply them.
7	Apply existing knowledge and concepts to identify, order and understand field observations.
8	Show the ability to present and write a coherent analysis of fieldwork findings and results in order to justify conclusions, as well as to interpret meaning from the investigation, including the significance of any measurement or other errors.

Figure 3: A level Fieldwork skills and stages in the 'enquiry pathway'

Notes: (1) stages are based on Geography GCE AS and A level subject content December 2014 Reference: DFE-00693-2014 © DfE

(2) this is different from the AS, although there are many overlaps. This must be considered for co-teaching AS and A level. See here for co-teaching

c. Non-examination assessment: Independent Investigation

The Non-Examination Assessment (NEA) consists of an independent investigation which will be assessed by a written report of 3000 to 4000 words.

Students are required to undertake an independent investigation that includes (but which need not be restricted to) fieldwork. The focus of the investigation must be derived from the specification the student is studying, based on either compulsory (core) or optional content. The student defines a question or issue relating to their topic and focus.

The student's investigation will incorporate fieldwork data (collected individually or as part of a group) and own research information and/or secondary data. The student's report will evidence independent analysis and evaluation of data, presentation of data findings through extended writing.

The guidance for length is 3000–4000 words. A student should not be penalised for exceeding the recommended length; however, work that significantly differs from the recommended length will might be self-penalising. In other words, students' ability to write succinctly and make points which are analytical (especially in the analysis and conclusion) will likely be better rewarded.

The work is internally marked and externally moderated; see pages 68 to 81 of the A level Specification for more information regarding marking, moderation and internal standardisation.

- Learning hours for the independent investigation are not specified because the process of producing the report is iterative and undertaken independently.
- The independent investigation report may be completed at school/college, or at home (or other location outside school/college), or at a combination of both.

Appendix 1 shows the route to enquiry as it appears in the specification, which is a useful plan for students to use as a framework for the coursework. Stages of enquiry are also described more fully in various places within this guide.

d. Support for fieldwork

Joint Awarding Body support:

A level Geography NEA Frequently Asked Questions

Student Guide to developing independent investigation titles

Exemplar enquiry proposal forms

Pearson Edexcel AS and A level Geography qualification support:

Examiner-marked A level Geography NEA exemplars

A level Geography Network Event pack - during 2017 our A Level Geography network events have focused on the A level Independent Investigation

Coursework Marking Training service from autumn 2017 – free face-to-face and online training events on how to apply the coursework mark scheme and reviewing coursework exemplars.

AS and A level Geography Maths for Geographers Guide

(3) Models for fieldwork delivery

a. Reviewing the models for the successful delivery of fieldwork

It is widely acknowledged that fieldwork *per se* has many benefits beyond simply preparing for assessment, and teachers should look to extend fieldwork opportunities: days out, residential or even international field trips wherever possible.

Research evidence has found that high-quality residential learning can enhance learner engagement, teacher–student relationships and achievement in core subjects, and support school staff to develop new and powerful teaching practices.

'When planned and implemented well, learning outside the classroom contributed significantly to raising standards and improving pupils' personal, social and emotional development.'
Ofsted, LOtC: how far should you go?, 2008

'[after their residential experience] More than two thirds of secondary students felt they had a better understanding of their strengths and weaknesses (73%), had developed their listening skills (71%), had more confidence in explaining things to others (71%) and felt more able to join in discussions at school (68%)'.
York Consulting, Evaluation of Learning Away: Interim Report 1, June 2013

In delivering the Edexcel AS and/or A level Geography Specification/s, several decisions need to be made in order to generate a successful delivery of fieldwork. There are of course a range of different scenarios that will be applicable to schools and colleges teaching either AS, A level or both:

1. **Only teaching AS Level** and therefore only undertaking fieldwork to **prepare for the AS exams.**
2. **Co-teaching AS and A level** but organising **separate AS and A level field trips**; fieldwork is **either** to prepare for AS exams **or** to prepare for the A level Independent Investigation.
3. **Co-teaching AS and A level** and organising a **single AS and A level field trip**; fieldwork is looking to prepare students for **both** AS exams **and** the A level Independent Investigation.
4. **Only teaching A level** and therefore only undertaking fieldwork to prepare for the **A level Independent Investigation.**

b. Guidance for three models of fieldwork delivery

A number of models can be suggested for the delivery of fieldwork in the context of scenarios 1–4 above. This guide contains suggestions only, and we recognise that decisions will be heavily influenced by factors such as school and college policy, calendars, sport fixtures, cost considerations, space availability at field centres / hostels / hotels / YHA, home or overseas etc.

Planning and developing field programmes should also be seen as an iterative process with time for both departmental and student reflection (e.g. student feedback) at the end of each year, so that refinements can be made for subsequent trips and visits.

i. Field trips for AS students

Fieldwork planning must take place soon after (if not before) the start of the course, since there is a relatively short window in which fieldwork can be delivered.

- In an ideal world, fieldwork is embedded within the teaching of the content to which it relates, and at a point when it can contribute most to students' understanding of that topic.
- Is not necessarily limited in length to one day per topic, rather it is sufficient to deliver the content and detail that support the classroom learning as well as the AS fieldwork aims.
- It may involve residential aspects where required, to allow learners to visit landscapes which present the best learning opportunities accessible.

But the realities of AS fieldwork of course must take into account the likely weather, student availability, exams and revision scheduling as well as overall costs. One model for fieldwork is presented in Figures 4a and 4b.

Time of year	**Autumn or Spring or both. Two split trips allow for the development of fieldwork skills and competencies, and can be better linked to content.**
	Minimum 2 days requirement
Focus	Physical option and human options (pages 8–9 specification), linked to an outcome for the written skills exam. Plus, opportunity to develop and reinforce locational / case-study information and to nurture mathematical, cartographical and geo-processing skills.
Location	• Experience close to home (local place) and further afield physical location, e.g. Dorset coastline • Or 'big city', e.g. Bristol, Birmingham, and physical trip, e.g. North Wales (glaciation)
Considerations	• What fieldwork have the students done already at KS3–4? • How can the experience provide opportunities for all aspects of the route to enquiry? • What does the local area offer in terms of fieldwork potential?

Figure 4a: An example AS model for fieldwork

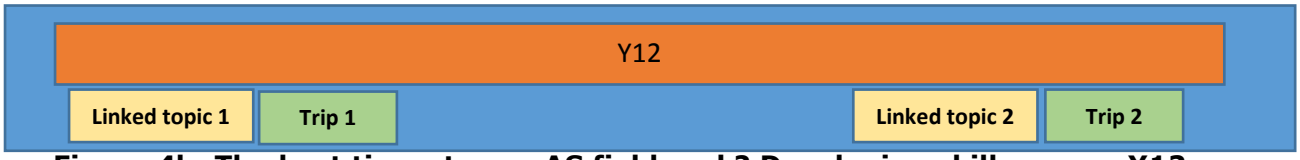


Figure 4b: The best times to run AS fieldwork? Developing skills across Y12

ii. Field trips for A level students

For stand-alone A level there is greater more flexibility regarding when fieldwork might be undertaken (compared to AS), and a split between the physical and human trips might be appropriate in order to allow for progression and the development of skills. Figures 5a–5c show three different models that could be adopted for the A level independent investigation.

Time of year	**Autumn Y12, plus summer Y12 or autumn Y13. Split linked to topics delivery.**
Focus	Developing and growing enquiry skills. Additional opportunity to develop and reinforce locational / case-study information and to nurture mathematical, cartographical and geo-processing skills.
Locations and activities	• Experience close to home (local place) and further afield physical location, e.g. Dorset coastline – 3 days in total. • 'Big city', e.g. Bristol, Birmingham, and physical trip, e.g. North Wales (glaciation) – 3 days in total. • 4th day: students work independently to collect their own new and additional fieldwork data, likely in a new location. Data used for the independent investigation. • Group data from days 1–3 could be used for comparison purposes, e.g. secondary.
Considerations	• What fieldwork have they done already? • How can the experience (days 1–3) provide opportunities for all aspects of the route to enquiry as well as promote individuality? • Can students be engaged through a 'discovery' fieldwork approach?

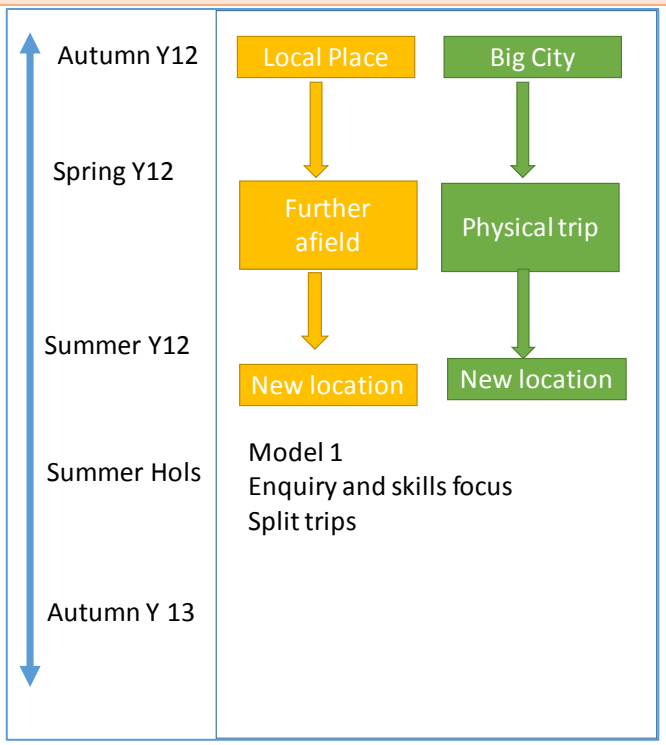


Figure 5a: Model 1 A level – Enquiry and skills focus, then students work on their own to collect their own data. 'Days out'

Time of year	**Summer Y12. Single trip to complete.**
Topic focus	Environments offered by residential provider or location of accommodation will determine focus.
Locations and activities	• Residential choice, e.g. location that can offer a range of environments to generate a wide range of experiences to help support individuality. • Series of days out from the field centre or other accommodation.

	• 4th day: students work independently to collect their own new and additional fieldwork data, likely in a new location. This is used for the independent investigation. • Group data from days 1–3 could be used for comparison purposes, e.g. secondary.
Considerations	• Careful costing needed to establish full trip expenses. • Residential has the possibility of reducing transport costs at the accommodation if environments are nearby. • There is more time for evening follow-up work. • Immersive experience can lead to rapid development of skills and competency. • 'Half-finished' data collection can present problems for individuals if re-visit is needed.

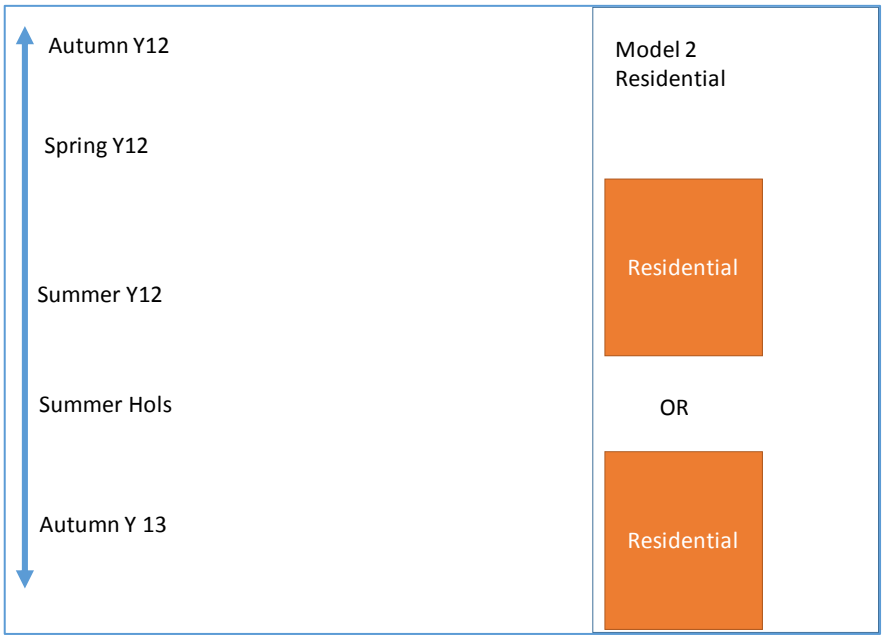


Figure 5b. Model 2 A level – Residential experience with students working in groups to collect data whilst away. 'Fully Residential'

Time of year	**Autumn or Spring Y12 (overseas) plus summer top-up – taught and independent (holidays).**
Topic focus	Environments offered by residential provider or location of accommodation will determine focus, plus top-up to provide range.
Locations and activities	• World city experience, e.g. 2-day trip to Barcelona (residential) using low-cost carriers. • 3x days local top-up with a physical focus to create appropriate balance. Experiential focus. • An additional time, e.g. summer holidays, when students work to collect their own data for the independent investigation (may be group approach).

Considerations	• This model can give a range of interesting experiences to create a wide variety of choice. • Students can replicate overseas experience in a local environment, or even create a comparison. • However, no opportunity to go back to world city to complete data collection if data missing. • Costs can be lowered if local trips utilise local town / city and make use of local physical environment, e.g. woodland ecosystems.

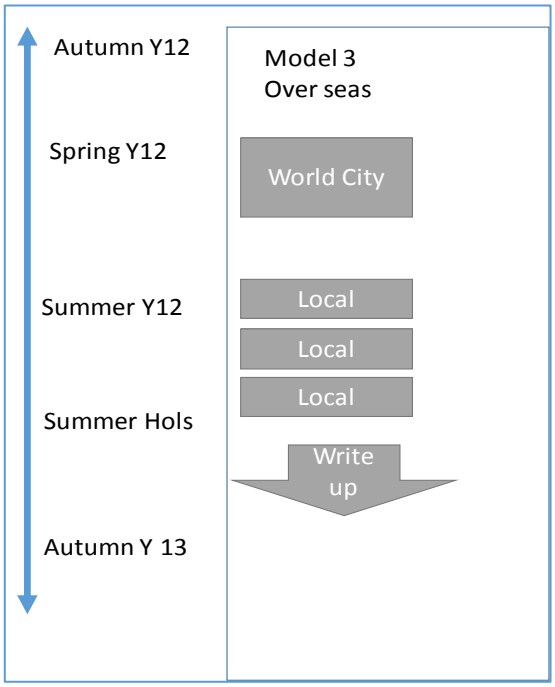


Figure 5c: Model 3 A level – a short overseas residential experience with students working in groups to collect data whilst away, plus local top-up. 'Part days out, part residential'

iii. Field trips for both AS and A level students

This is perhaps the more complex scenario since AS and A level have different assessment requirements. This is considered in more detail here.

Figures 6 and 7, from the FSC, show how fieldwork can be differentiated and also managed within the curriculum.

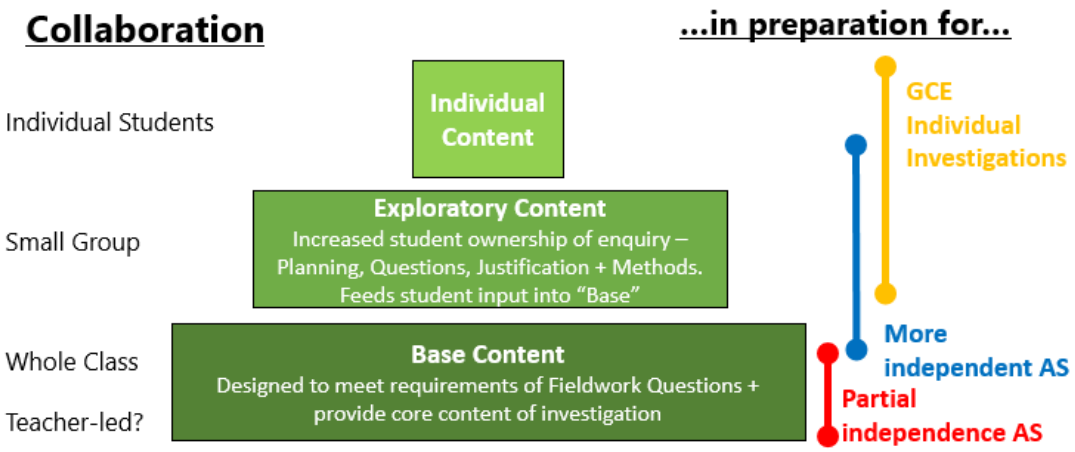


Figure 6: The independence 'equation' – providing opportunities for students to work towards full independence.

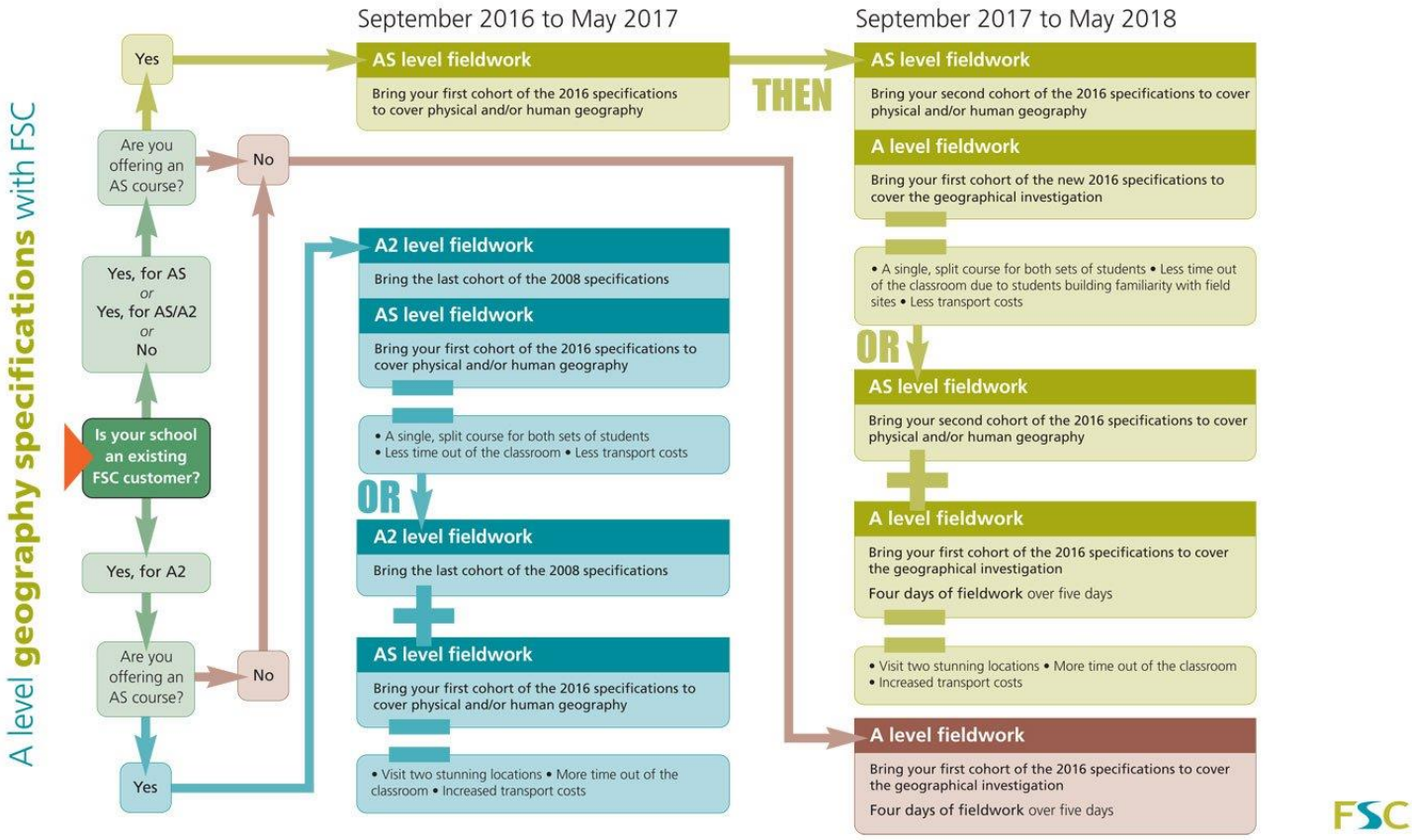


Figure 7: FSC (Field Studies Council) has also its own model of how transition can be managed between legacy and new specifications

Source: https://www.field-studies-council.org/outdoorclassroom/fieldwork-england/a-level/a-level-geography-fieldwork/2016-specs.aspx

(4) The Geographical Enquiry Process

Enquiry has been long been associated with geography teaching as well as fieldwork. Roberts (2013) suggests that there are four essential elements of learning geography through enquiry:

1. Enquiry is question-driven
2. Enquiry is supported by evidence
3. Enquiry is reflective
4. Enquiry requires thinking geographically.

In both the Edexcel AS and A level specifications, enquiry is explicitly linked to the fieldwork components. But enquiry should also be seen as a set of linked ideas (Figure 8) that also develop further and wider geographical skills. These are especially relevant in the context of geographical thinking: clarify values, interpret information and evidence, recognise relationships, reach conclusions and explain possible processes.

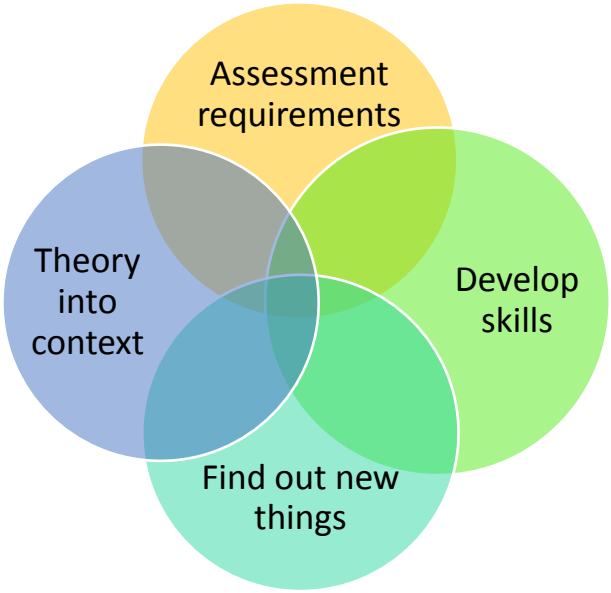


Figure 8 (right): Other aspects of geographical enquiry

a. Enquiry – 'the Margaret Roberts way'

There are several different interpretations of the meaning of enquiry. The one that is most relevant to AS and A level is highlighted below.

Students learn through an enquiry-based approach, finding out information themselves, rather than listening to somebody standing at the front of a classroom telling them what they need to know.
Enquiry is when students decide what they are going to look at and then find their own evidence. Learners decide their own learning pathways with minimal input from a teacher or facilitator.
Enquiry is a form of problem-solving where students have to go through a series of ideas and questions. They have to search out what is relevant and make geographical connections. Enquiry includes values, attitudes and wider perspectives.
Students (often in an out-of-school context) have an opportunity for independent learning based on a set of problems or hypotheses, for which they can find the information and formulate answers. The hypotheses (or equivalent) drive the desire to collect evidence in order to find answers.

Source: Roberts, M (2013), *Geography Through Enquiry*. Geographical Association.

An important aspect of developing a high-quality enquiry experience is to see enquiry as a differentiated set of processes on an incline of competence and confidence. This moves from a 'closed task' to a 'framed enquiry' to the full 'independent enquiry'. In each of these levels there is a change in the way students are required to work, gradually progressing to a more independent state. Details are provided in Figure 9.

	Closed task	Framed enquiry	Independent enquiry
Ask questions	A task is presented. Questions are not explicit.	Enquiry questions are selected by teacher but are explicit.	Students decide enquiry questions, framed by teacher input.
Data	Decisions about fieldwork procedure are made by teacher. Data is presented as authoritative evidence.	Decisions about fieldwork procedure are made largely by teacher. Data is presented as information to be interpreted.	Students are involved in key decisions about fieldwork procedure and data sources.
Making sense	Activities devised by teacher to achieve pre-determined objectives. Students follow instructions.	Methods of representation are open to discussion and choice. Analysis is independent.	Students independently analyse evidence and make decisions / reach conclusions.
Reflection	Predictable outcomes.	Students discuss what they have learnt; different outcomes.	Students consider validity of evidence / reliability of data and methods.

Figure 9: Fieldwork progression and increasing independence

b. The enquiry 'deficit'

Some critics of the legacy GCSE Controlled assessment suggest that it has created an 'enquiry deficit'. In other words, students overly concentrate on observations, representation and analysis (Figure 10) rather than seeing enquiry as a much larger and reflective process.

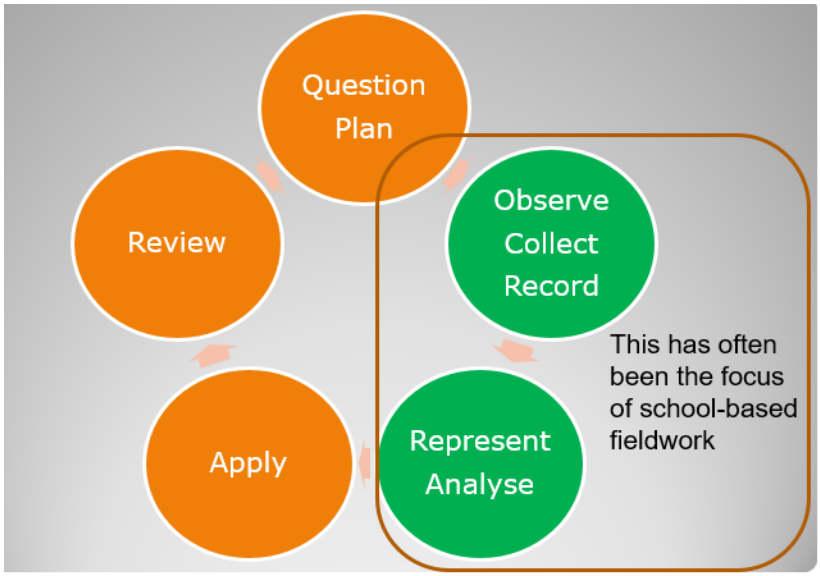


Figure 10: Too much concentration on 'doing' has led to an enquiry-deficient model, according to some critics

Instead, a more complete and better enquiry model is one based on a series of discrete stages or procedures which allow for reflection. In other words, a more circular model of enquiry, rather than a linear one, should be adopted (Figure 11).

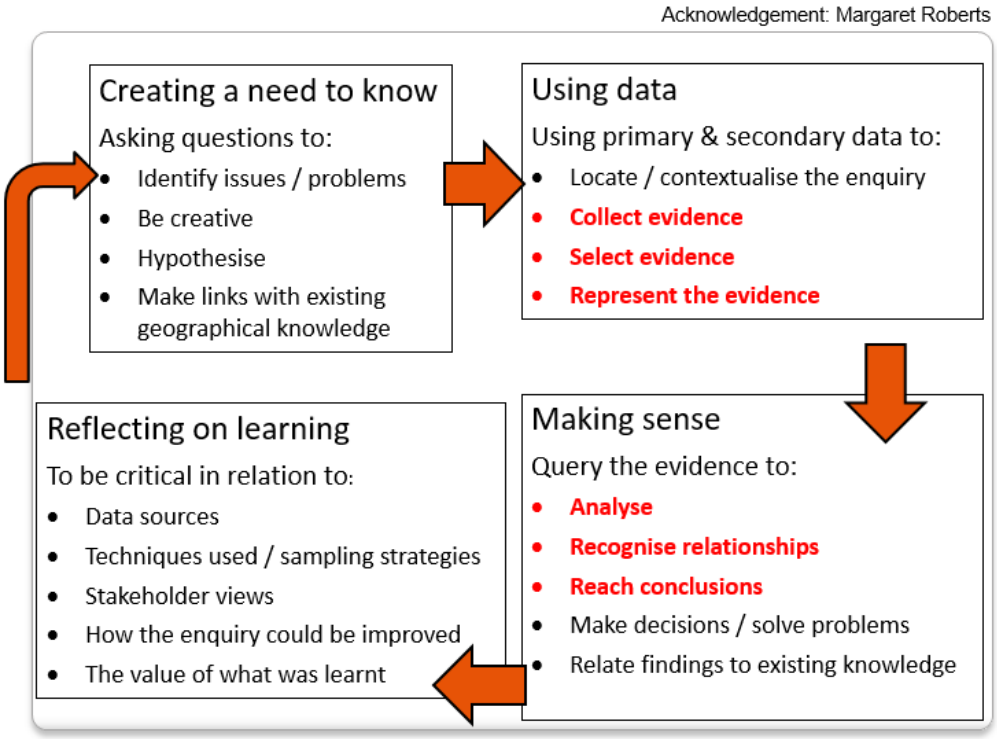


Figure 11: A high-quality circular model of enquiry
Note – the red text indicates where students were given much of the reward in the legacy CA mark schemes.

c. Geographical enquiry in AS and A level fieldwork

There are several ways of structuring and completing the independent investigation (e.g. hypothesis testing, discovery fieldwork and sensory fieldwork). This guide, however, will consider the enquiry approach which compliments both the independent investigation and the AS fieldwork assessment. Figure 12 presents a more philosophical set of values linked to enquiry.

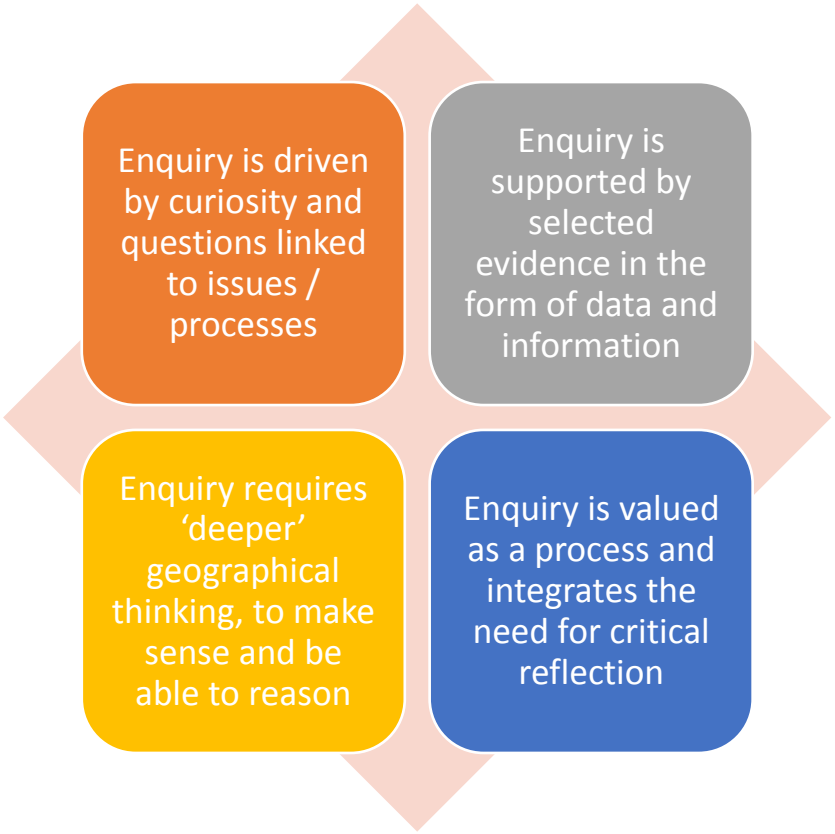


Figure 12: A philosophy for enquiry that might support higher attainment

i. Parts of the enquiry process.

The enquiry pathway for fieldwork should be familiar to many students as well as teachers. As previously indicated, the understanding of the order and nature of the various and sequential stages needs to be embedded into geographical teaching and learning.

There are also various sources that can be used to support this sequence. For example, the FSC has published a student guide for the planning and delivery of fieldwork (see extract in Figure 13a). An alternative and more accessible pathway can be found in Figure 13b. Figure 13c shows the enquiry pathway from the Edexcel International GCSE Geography which some learners may also find useful instead.

Independent investigations

This guide takes the enquiry approach to help you structure your independent investigation.

Enquiry approach

Geographical enquiry involves:

- asking a geographical question
- gathering relevant evidence (quantitative and/or qualitative) to answer the question
- presenting and analysing the evidence, which may include statistical analysis of numerical data although this is not essential
- drawing conclusions: creating a geographical argument to interpret the evidence
- evaluating your methods and conclusions

Other approaches to fieldwork

There are other valid approaches to fieldwork. It is also possible to incorporate elements of these other approaches into a geographical enquiry.

Hypothesis testing Use geographical theory to generate hypotheses. Test each hypothesis by collecting appropriate field data, then analyse data using statistical tests.

Discovery fieldwork Explore a place for youself by making observations, taking photographs or collecting objects. Consider urban drifting, where you take a structured but unplanned journey through a city.

Discovery fieldwork includes ethnographic techniques such as participant observation.

Places can also be explored using creative writing, images and film. Here the evidence can be interpreted by iconological content analysis, image analysis and coding.

Sensory fieldwork Explore a place by sense of smell, touch, sight, hearing or taste. You can deprive other senses, perhaps with a blindfold, to heighten awareness of the target sense.

Possible strategies include sound mapping, back-to-back field sketching, aroma mapping and emotional mapping.

Introduction and planning

Enquiries are driven by curiosity. What would you like to know about that would involve you doing some research of your own? Think about which geographical concepts affect you. Your independent investigation can be based on any part of your awarding body's A level Geography specification.

Aims and hypotheses

Aim A statement of what you are trying to find out. In Geography there are broadly two kinds of aims:

- Are things different from each other? e.g. 'Why does the rate of coastal erosion vary between different parts of Holderness?'
- Are things associated with each other? e.g. 'Is there a link between deprivation and clone towns in north Suffolk?'

Hypothesis An idea or explanation that can be tested through study and experimentation. A well written hypothesis is clear, directional and measurable.

e.g. 'There is an inverse relationship between the index of multiple deprivation and the clone town index in north Suffolk.'

Data and evidence

Data A set of values, recorded and interpreted to produce information.

Evidence Facts and information used as the grounds for belief or disbelief.

Primary data Data you have collected yourself, such as pebble measurements, questionnaire responses, photos and audio/video recordings.

Secondary data Data collected by someone other than yourself. It includes published data (such as census results and records of rainfall), historical data (such as old photos) and data collected by other students.

Quantitative data Data that records quantities (e.g. numbers, sizes or frequencies).

Qualitative data Data that records subjective qualities (e.g. opinions, attitudes and beliefs).

FSC

Figure 13a: An extract from the FSC's Geographical Investigations, with a focus on the beginnings of the 'enquiry approach'
Source: http://www.field-studies-council.org/publications/pubs/geographical-investigations.aspx

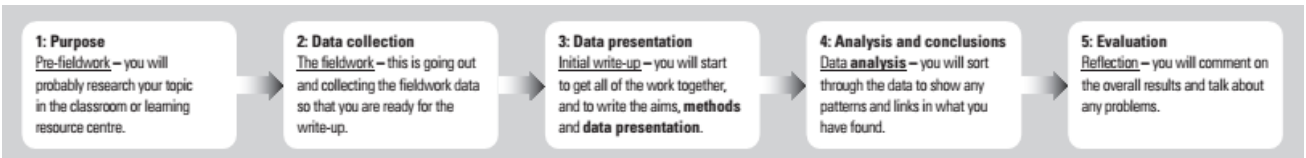


Figure 13b: A historic enquiry pathway for Controlled Assessment. Some aspects are still useful and relevant
Source: Edexcel GCSE Geography B Controlled Assessment Workbook (2013)

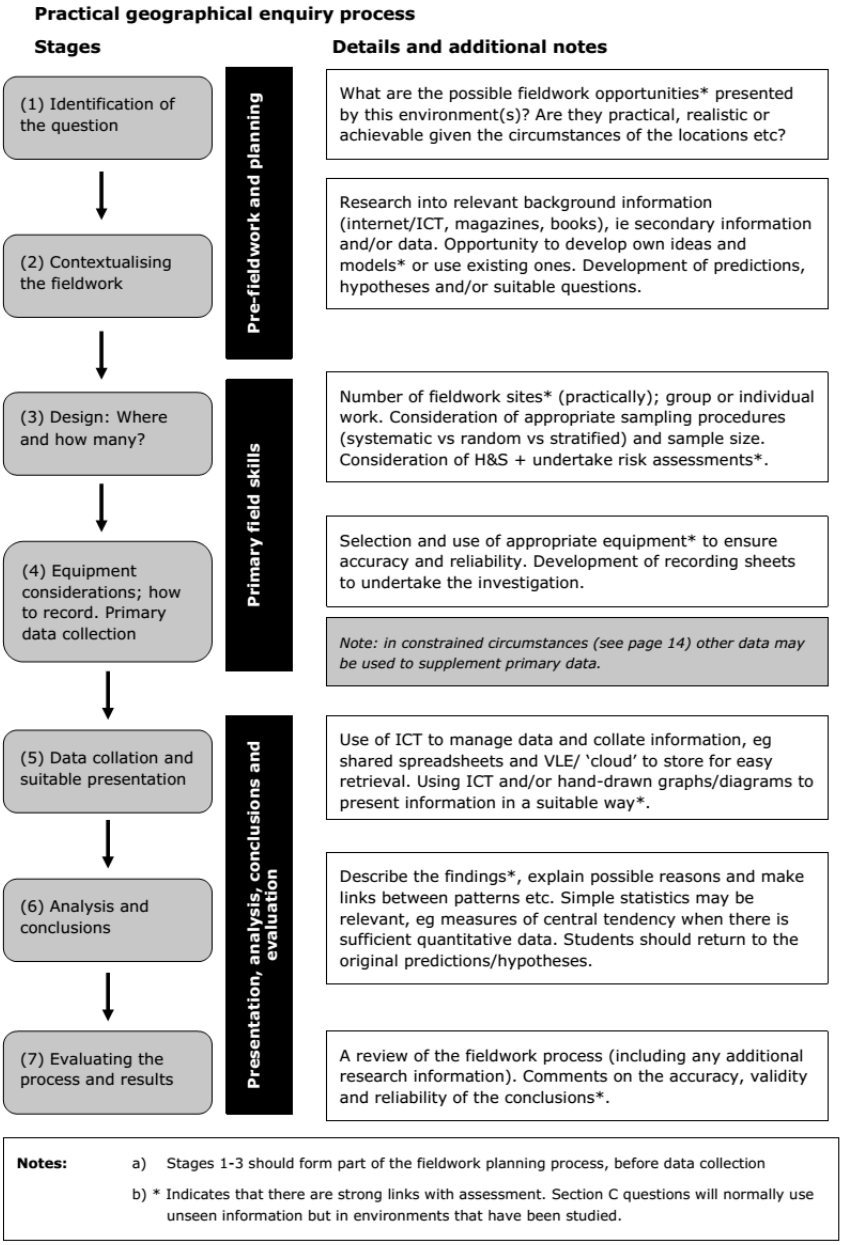


Figure 13c: An Edexcel International GCSE Geography enquiry pathway. This is more closely aligned to the requirements of the NEA

(5) Planning, managing and delivering field trips with an AS focus

a. Before the field trip – long-term planning alongside course content

Thoughtful pre-fieldwork planning is essential to the successful outcomes from fieldwork linked to the Edexcel AS Geography qualification. This can be split down into some longer- and shorter-term strategies, which importantly, embed competence and confidence in fieldwork and linked skills. Y12 is a good opportunity to develop individual enquiry skills, whether for the AS assessment or for later use in the independent investigation. This is indicated in the Pearson Edexcel AS and A level Geography course planner – see Figure 14.

23 Jan	Week 3	**Area of study 2, Topic 4 Shaping Places** **Either Option 4A Regenerating Places *or* Option 4B Diverse Places** **Option 4A Regenerating Places**	Roughly 24 hours of teaching over 6 weeks. Teach ***either*** Regenerating Places ***or*** Diverse Places. 1 day of compulsory fieldwork to be included here. An additional week to be spent completing mini write-up of fieldwork in preparation for fieldwork exam questions at AS level, and/or the Independent Investigation at A level.
30 Jan	Week 4	**EQ1:** How and why do places vary? (an in-depth study of the local place in which you live/study and one contrasting place) **EQ2:** Why might regeneration be needed?	
6 Feb	Week 5	**EQ3:** How is regeneration managed? **EQ4:** How successful is regeneration? **Option 4B Diverse Places**	
13 Feb	Week 6	**EQ1:** How do population structures vary? (an in-depth study of the local place in which you live or study and one contrasting place) **EQ2:** How do different people view diverse living spaces?	

Figure 14: An extract from the Pearson Edexcel 2016 AS and A level Geography Course Planner where fieldwork skills are flagged, linked to topics

Longer-term strategies should, wherever possible, be integrated into the teaching and learning of particular topics and content, although some colleagues may choose to provide additional support in the form of a dedicated fieldwork and enquiry-skills week.

There are two main areas that could be developed alongside Y12 taught content:

- Confirming the route to enquiry. Transferable skills.
- Assessment: Familiar & unfamiliar exam Qs

This guide has already provided details about both the nature and significance of the route to enquiry. But the taught topics also provide opportunities for looking at an overview of the nature and type of fieldwork assessment questions, and seeing how they follow on from the taught content, e.g. linking to an option in Section B or C.

b. Before the field trip – short-term in the weeks before the field trip

i. A virtual field trip to select and locate possible places to study

In this context, a virtual field trip can be seen as a simulation exercise. There is a range of ways in which this could be achieved, e.g. GIS and OS maps (see Figure 15), or photographs. The important idea is to let the students become immersed in the range of decisions that have to be made when planning a suitable location to study, e.g. finding a location to study coastal

defences, rather than just finding a coastal location. These could include access, terrain, land cover, drainage, land ownership, proximity to roads and access points, etc.

Students should then narrow down a location(s) and be able to justify why this particular place was chosen. Extension discussions might focus around how large an area to cover etc. and linking this dialogue to the development of cartographic and scaling skills.

This place of course will probably be different to where the fieldwork might be planned, depending on how the activity is set up. It would then be useful to compare the proposed fieldwork location with the students' choices. How and why might there be differences? Students, for example, could construct a list of facts that would be useful for them to know for next time. Ideally, students will identify that they need to do more desk research and pilot surveys in order to progress.

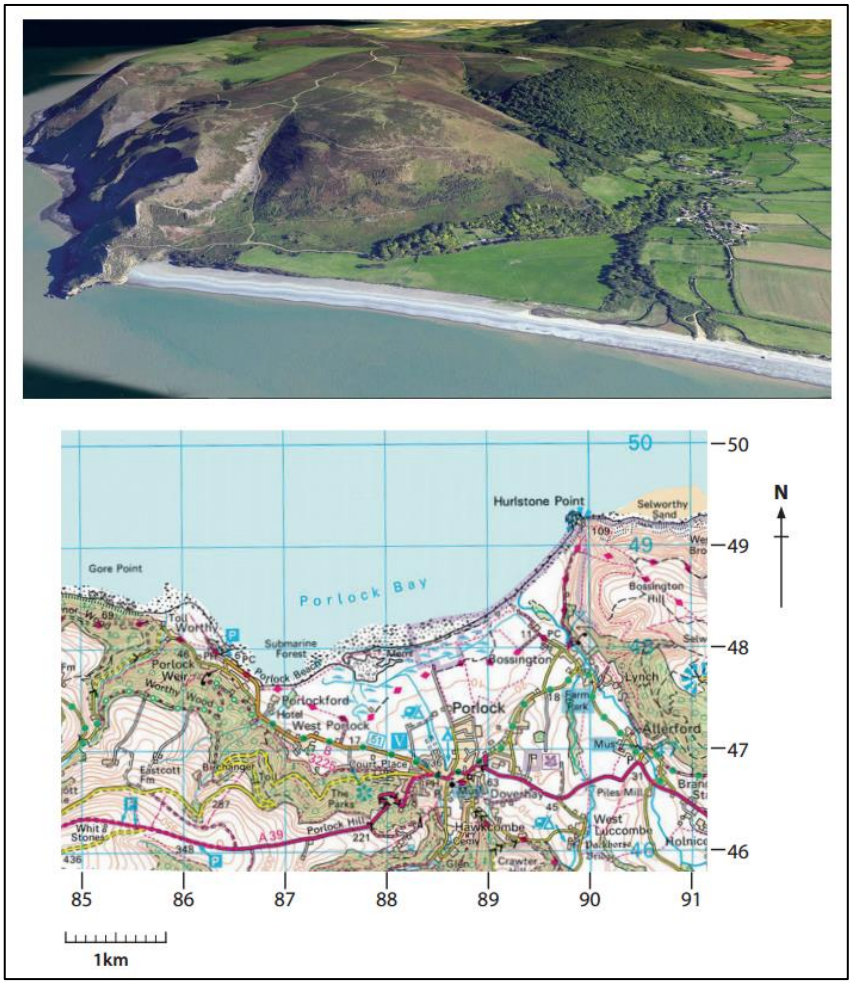


Figure 15: Using resources to simulate a place, so that students can make decisions about a range of planning considerations in relation to fieldwork. This example is from the GCSE Geography A Sample Assessment Materials (SAMs), but serves the purpose well in the context of virtual fieldwork
Source: Pearson Edexcel GCSE Geography A (9-1) Sample Assessment Materials

ii. Generating possible themes, focuses and questions

A follow-on activity is to then ask students to devise a range of themes or possibly questions, based around a resource, e.g. a map or a photograph. Think of this as a refining or filtering exercise, having first established a location and site choice. Figure 16 shows an example of

fieldwork ideas that could be developed around a linked map and photograph. Again, students should be supported so that they have confidence in this part of the enquiry process, whether in response to an AS assessment, or for a bigger toolkit that supports the independent investigation.

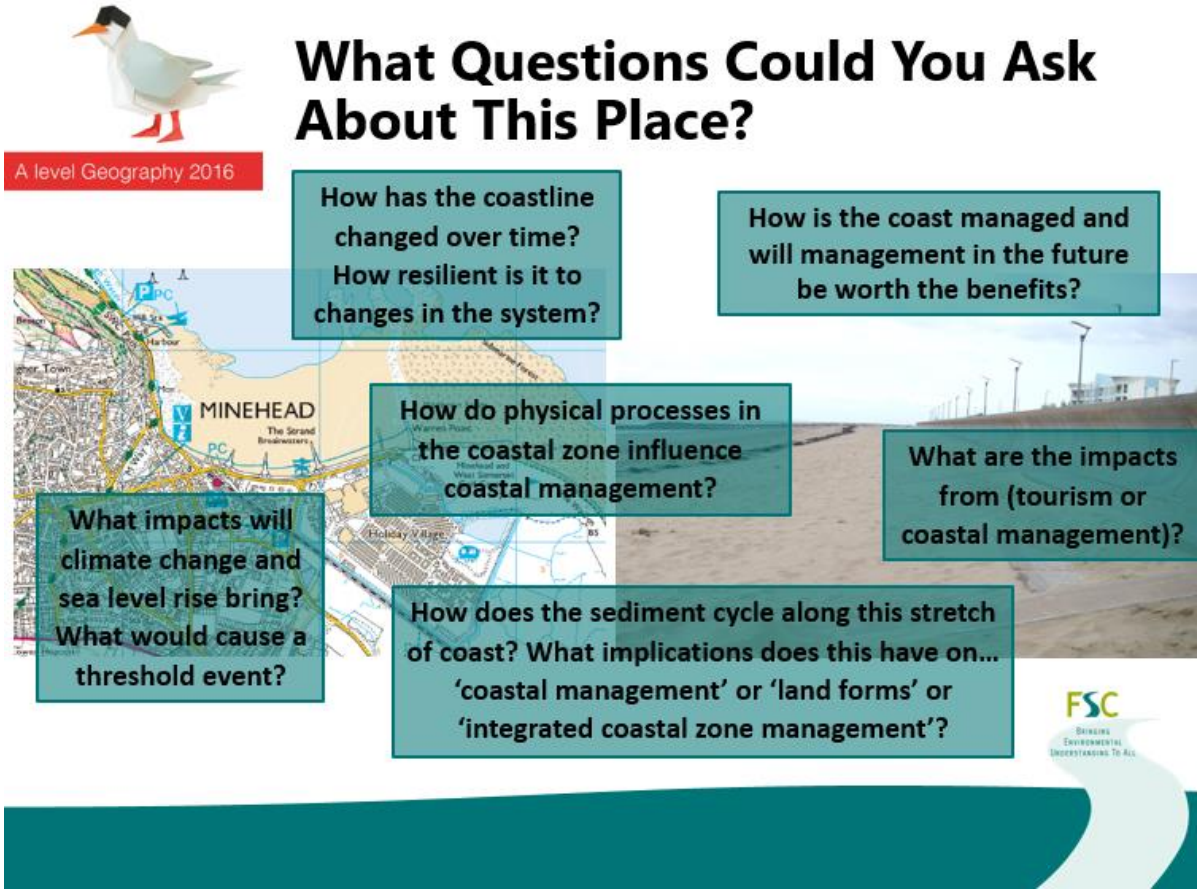


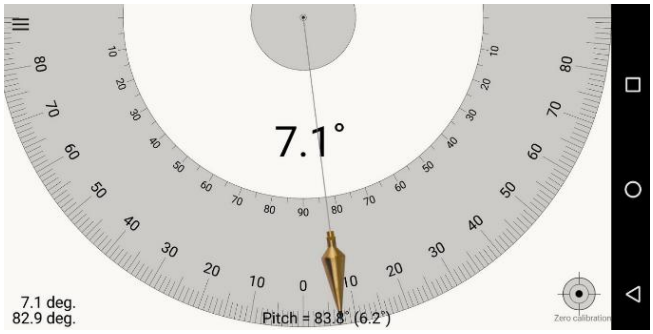
Figure 16: An example of types of geographical questions that could be generated based on 'virtual' resources. Notice the incorporation of the specialised concepts, e.g. threshold and resilience
Source: Pearson Edexcel AS and A level Geography Getting Ready To Teach training event (2016).

iii. Considering sampling, design and equipment

Different resources can also be used to support students thinking about both design (where, how often etc.) and types of equipment choices. Note that sampling is covered later in this guide. This is a stage in the enquiry process where students often have difficulty in terms of both the decision-making process and its associated reasoning. It might also be at this stage in the design that statistics is at least considered (if relevant), so that an appropriate sample size, for example, can be generated for the statistical test.

Figures 17a and 17b give examples of two different approaches to measuring gradient. Students should be able to analyse, interpret and evaluate such equipment, as well as recognise that there may be many different ways (methods) to collect the same type of data or information. This is especially important in the context of the AS fieldwork assessment, where students may be presented with data and equipment from an unfamiliar context. They will be need to be equipped with the confidence to deal with resources that may present unusual equipment

and/or recording sheets and make sense of how to use them. Pre-fieldwork is vital to reinforce this competency so students they practise systematic data collection onto recording sheets and into a format they have constructed themselves.



Figures 17a and 17b: Students need to develop transferable fieldwork skills, understanding that different fieldwork 'tools' can be used to collect the same data.
Sources: David Holmes / Making Geography Matter

Field experimentation with equipment can be used to introduce, discuss and demonstrate ideas around precision, accuracy and reliability, and the notion that some methods for example are faster/less expensive but less precise.

iv. Experiment with a range of methods and equipment, and evaluate what works well/less well before deciding on methods to collect data for class questions.

In the context of AS assessment, then, students must be prepared not only to recognise unfamiliar equipment or design decisions but also to explain and possibly assess reasons behind such decisions. There is an opportunity here for group work in order to examine the fieldwork decisions and to reach decisions as to which equipment might be most appropriate and why. This information can then be used to support the real fieldwork that will be undertaken in the near future. Teachers should consider allowing students to see and use maps, equipment and relevant resources in the classroom, which will be used for the planned fieldwork. Figure 18 shows callipers that are used to measure the length of a sediment along an axes. Practice with this in the classroom as part of pre-fieldwork might be useful in developing independent fieldwork skills.

Figure 18: Practising with equipment as part of pre-fieldwork can pay dividends later
Source: David Holmes / Making Geography Matter

Teachers will obviously need to make decisions as to how much pre-fieldwork time should be used within the classroom, but research evidence suggests the more the better!

v. During the fieldwork – teacher acts as both a coach and facilitator.

During and following the fieldwork, the role of the teacher becomes very important in supporting a range of activities which begin to allow students to become more confident with fieldwork, especially independent fieldwork. Utilising the techniques of both coaching and facilitating should help to develop an atmosphere of deeper understanding out in the field (Figure 19).

Here the role of the teacher is to support and facilitate fieldwork, but not to directly instruct either groups or individuals. Students should be encouraged to discover, experiment and explore, and to not worry about 'getting it wrong'. This is perhaps one of the most significant differences between the legacy controlled assessment which was 'top-down' (closed task) managed and this approach, which is more of a framed enquiry.

Facilitator	Facilitating is asking a series of questions that takes a group on a journey of awareness and allows reflection. It is useful for thinking about the fieldwork experiences and trying to come to a consensus on the significance of conclusions, for instance. The model is built on by asking a specific sequence of questions that are relevant to the subject and the group. Questions should be open-ended, and students' answers should be discursive and thoughtful.
Coach	Coaching takes place for the purpose of creating a path for positive personal change, so its much more personal to individual students. The coach will clarify areas that need improvement and supports the individual in trying to accomplish the shift from the current state to a more advanced, improved state. The coach provides feedback on areas that are working well and those that still may need improvement. If a coach sees a student slide back into old patterns, discussions are held about what needs to be done to sustain the desired improvement.

Figure 19: Facilitator vs coach in the context of fieldwork

A focus for the field discussion should be centred around stages in the route to enquiry, in particular:

- the potential range of questions or ideas that can be investigated
- the range of design approaches and subsequent field techniques
- possible data presentation / analysis / conclusions / evaluation issues.

Figure 20: Coaching in the field can be problematic with large numbers of students. One solution is to use pre-provided prompt questions and get them to discuss key ideas as smaller working groups
Source: David Holmes / Making Geography Matter

The specification makes clear on pages 7–9 the type and range of fieldwork needed (see Figure 20), yet it is important that students are given as much ownership and control of the fieldwork as can be practically achieved. Perhaps the range and quality of data at AS is far less important than engagement and deeper understanding of the how, when, where etc? In other words, the evaluation aspects – student reflection on these concepts is at least as valuable as the act of collecting data in itself. Students must think carefully about types of data collection and try to engage in a conversation about accuracy, reliability and true values, as well as different types of sampling in the context of survey design.

Area of study 2 Topic 4 Option 4A Regenerating Places (relevant to a single urban area **OR** rural area*)
Students could investigate questions relating to the following themes, and then use those questions to devise an appropriate methodology: • evidence of regeneration strategies • public opinion on local regeneration strategies • historical change in the area.

Figure 21: Extract from the specification in relation to the fieldwork focus. The key words and phrases should be emphasised while undertaking fieldwork, to make connections between what is being studied and the specification demands

Hypothesis-testing (i.e. replicating the scientific approach) as a mechanism to deliver fieldwork in relation to the AS may not always be successful, since it can carry a number of complications.

These are identified by Caton (2006), and seem especially relevant in the context of what the Edexcel AS fieldwork is trying to achieve.

- Student engagement with repetitive activities or ones for which they do not understand a meaningful purpose can be low.
- Knowledge and understanding can be poorly developed, especially where data-collecting and data -processing or interpretation are widely separated (i.e. where there is no discussion in the field). Transfer of doing to learning is limited.
- The narrow focus of work (e.g. repetitive counting) can limit a holistic appreciation of a place or issue. Students' feelings or responses to a place are not addressed or developed.
- With a traditional deductive (or reductionist) approach, limited use is made of the student's prior understanding or experience to offer different expectations.

So at AS a conversation around inductive and deductive methods may also be applicable to the enquiry process as an alternative to simply 'hypothesis-testing'. For example:

Deductive	Choose a model or theory and see what questions you can explore about it at a particular location. This approach often uses hypotheses and / or questions as a starting point.
Inductive	Choose a question or area of interest, then collect some data in a specific location and see if you can make some generalisations that might apply to other areas. This often uses an aim as a starting point and comes up with a statement / conclusion or even a possible hypothesis as an output of the study.

vi. Post-field trip – teacher acts as facilitator.

- Summary write-up / revision notes

Here, the outcomes from the fieldwork need to be 'assessment-ready'. There are three important points here. Students should be guided, through facilitation, to:

- **Not over-write the outcomes for each stage**. The maximum tariff AS marks on fieldwork are 9, with about one page of writing.
- **Write in a style which is likely to be mirrored in the assessment**. This means being analytical and providing explanations as well as justifications. Here, there is no point in just describing what they did / found.
- **Be prepared to sketch / draw locations as well as outcomes**. The assessment could require candidates to sketch the locations of sites, for instance, or to present their findings using suitable graphical and/or cartographical approaches.

These notes could be created collaboratively, or as groups, then shared as part of a wider discussion. It should be stressed that both the familiar and unfamiliar questions can relate to any one of the eight stages in the enquiry pathway.

- Practice exam questions

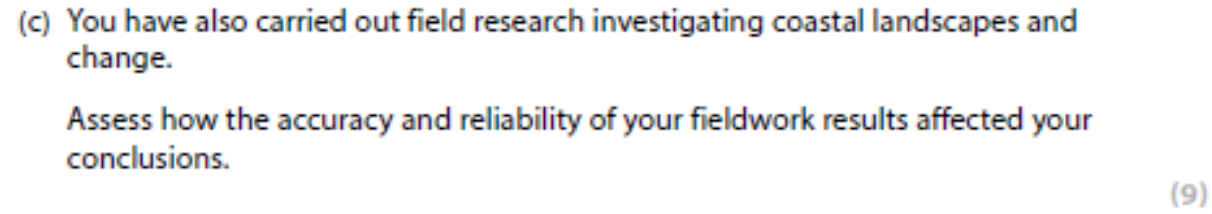
Practice and simulated exam questions will be important as a way of refining the outcomes from the field trip into something that is meaningful in the context of assessment. Making the work 'revision friendly' through adaptation and synthesis of the different enquiry stages is likely to be a useful strategy. Figure 22 provides some examples of approaches that focus on generating a better understanding of the 'how and why', ready for assessment.

'Reverse engineering' exam questions	Taking the SAMs and creating their own different questions, based on the styles and formatting of the sample questions (see examples on next page).
Writing a mark scheme	Including showing an understanding of the meaning of the fieldwork AOs (Assessment objectives). Use the SAMs for guidance.
Resource questions	Selecting and then using a suitable resource from their own results that could form part of an AS fieldwork question. Examples could be pictures of equipment or environments, for instance.
Developing good, bad and 'middling' responses	Working in groups to model different types of longer 9-mark questions, using the appropriate command word based on the sample assessment materials. Students could use the Pearson Edexcel AS Geography Examiner Marked Student Responses as a starting point.
Peer-marking and assessment	Using the published mark schemes to mark other students' work and possibly providing feedback and/or suggestions for improvement.
Fieldwork glossary	Students often find the language of fieldwork both mysterious and confusing. A glossary of technical terms may help.
Place names and location details	Precise recall of places, streets, habitats, regions etc. might be beneficial to add realism to a fieldwork answer. Can students create a list of key locations?

Figure 22: Examples of assessment activities students could focus on as part of a fieldwork follow-up

Two examples of 9 mark extended open response questions used in the Edexcel AS Geography SAMs are below. The final question item in the fieldwork question will always be a 9 mark extended open response question and will assess students' own fieldwork experience. The command word used for these types of questions will always be 'Assess'. Please see page 57 of the AS specification for a definition of all the command words used.

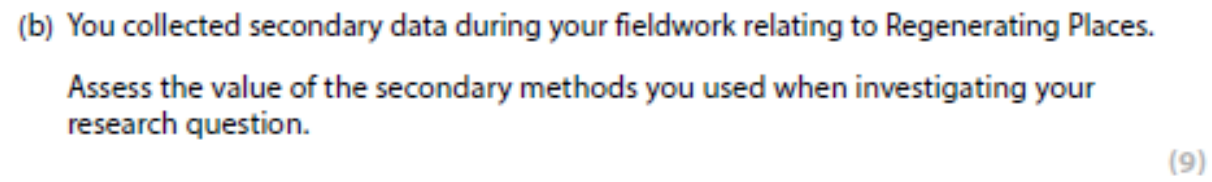
AS Geography SAMs, Paper 1, Question 6 (c)


(c) You have also carried out field research investigating coastal landscapes and change.

Assess how the accuracy and reliability of your fieldwork results affected your conclusions.

(9)

AS Geography SAMs, Paper 2, Question 3(b)


(b) You collected secondary data during your fieldwork relating to Regenerating Places.

Assess the value of the secondary methods you used when investigating your research question.

(9)

Other ideas could be the use of GIS, e.g. as an ESRI 'Storymap' to synthesise the fieldwork, or the use of a group-directed PowerPoint presentation or MS Sway to show the stages of the enquiry linked to students' findings.

(6) Field trips to focus on the Independent Investigation (NEA)

The independent investigation, or NEA, accounts for 20% of the total marks of the Edexcel GCE in Geography. Details of the independent investigation have already been outlined earlier in this guide. Students must be reminded that the independent investigation must:

- Be based on a question or issue defined and developed by the student individually to address aims, questions and/or hypotheses relating to any of the core or non-core content.
- Incorporate field data and/or evidence from field investigations, collected individually or in groups.
- Draw on the student's own research, including their own field data and, if relevant, secondary data sourced by the student.
- Require the student to independently contextualise, analyse and summarise findings and data.

The next pages in this guide provide a series of suggestions and points for discussion in relation to the planning, management and delivery of the independent investigation. These proposals and ideas will hopefully be useful for the many and varied conversations that will ensue, both with colleagues and students.

The backdrop to much of this discussion centres around progression, moving from a framed enquiry to a fully independent enquiry – see Figure 23.

Framed enquiry	Independent enquiry
Enquiry questions are explicit but developed by the teacher. Decisions about fieldwork procedure are largely made by the teacher. Literature research is collaborative and supported.	Students decide enquiry questions, framed by teacher input. Students largely make their own procedural decisions, with the teacher acting as either coach or facilitator in the early stages. Literature research is independent.

Figure 23: Progression in fieldwork and enquiry skills is essential for developing the skills needed to complete a successful independent investigation

a. Before the field trip: long-term planning alongside course content

As in planning for the AS, thoughtful pre-fieldwork planning is essential to the successful outcomes from fieldwork linked to the Edexcel A level Geography qualification. This can be split down into some longer- and shorter-term strategies (i.e. within a particular topic or teaching year, or from KS3–5). At this level, such strategies should be firmly linked to different stages in the enquiry process so that students can develop their investigation and research skills throughout the course and especially in the first year.

i. Introduction to the Independent Investigation.

It is important that students are made aware early in the course of the mechanics, expectations and delivery schedule of the independent investigation. They should be clear about the need to understand the generic mark scheme as well as recognising the requirement to complete their own independent investigation form before starting. They should also be shown the NEA Teacher guidance (pages 118–119 in the specification) – see Figures 24a and 24b.

Appendix 5: Geography independent investigation form

Candidate name	**Candidate number**	**Examination Series**
Centre name		**Centre number**
Investigation title	**How the title links to specification content**	
Planned investigation hypothesis or question/sub-questions		
Investigation focus – indication of how the enquiry will enable the candidate to address their investigation title and explore their theme in relation to the chosen geographical area.		
Planned methodology – indication of qualitative and/or quantitative techniques including primary and, if relevant, secondary data collection techniques, indication of the planned sampling strategy or strategies.		**Individual/Group data collection (Delete as appropriate)**
Teacher's approval and comments		
Teacher signature	**Date**	

Appendix 14: Geography NEA teacher guidance

This table is about demonstrating what is considered to be specific guidance and what is considered to be general guidance. Specific guidance can constitute malpractice in certain circumstances and must always be recorded and taken into account when marking candidates' investigations.

Investigation stage	Specific guidance	General guidance	Reasoning
Exploring focus	Give candidates a list of titles from which to choose Give candidates an area of specification content they must focus on in their investigation	Discuss specification content to find potential themes and relevance for an investigation Broadly outline the stages of the investigation, mark scheme expectations and the Geography Independent Investigation form.	Teachers will need to provide an introduction to candidates. This could include detailing the equipment available from the school and/or describing expectations of the NEA through the mark scheme The investigation must be an independent piece of work by the candidate so teachers shouldn't be giving candidates direct information such as titles.
Title of the investigation, focus of investigation (sub-questions), purpose of investigation	Give candidates a list of titles from which to choose Make significant changes to a candidates title so it is re-written Give candidates or make strong suggestions about the sub-questions Tell candidates what the purpose of the investigation is so they all have a similar approach / idea and this is reflected in their draft	Explore and discuss with candidates what makes a good title for an investigation and the value / importance of breaking this down into sub-questions. Direct candidates to material produced by exam boards on what makes a good title Give candidates an example title to critique and amend which is unrelated to any investigations a candidate may be interested in	The teacher acts as the facilitator, encouraging candidates to plan their investigations and to 'read around' to get to grips with their title and sub-questions The teacher provides opportunities for candidates to set themselves up as independent learners through general discussions around the title, sub-questions, choosing a

Figures 24a and 24b: Pearson Edexcel A level Geography Specification extracts of the proposal form and NEA teacher guidance

The framework (Figure 25) is also useful to show the relationship between the teacher and the student at different times within the enquiry process. At Stage 1 the teacher will need to explain the requirements of the mark scheme and the teacher might perhaps set some broad parameters such as themes from the specification or fieldwork locations. At the same time students might be working collaboratively to explore ideas. Note how further into the enquiry process (indicated by the circles and the key) the teacher becomes increasingly a facilitator, and the student more independent.

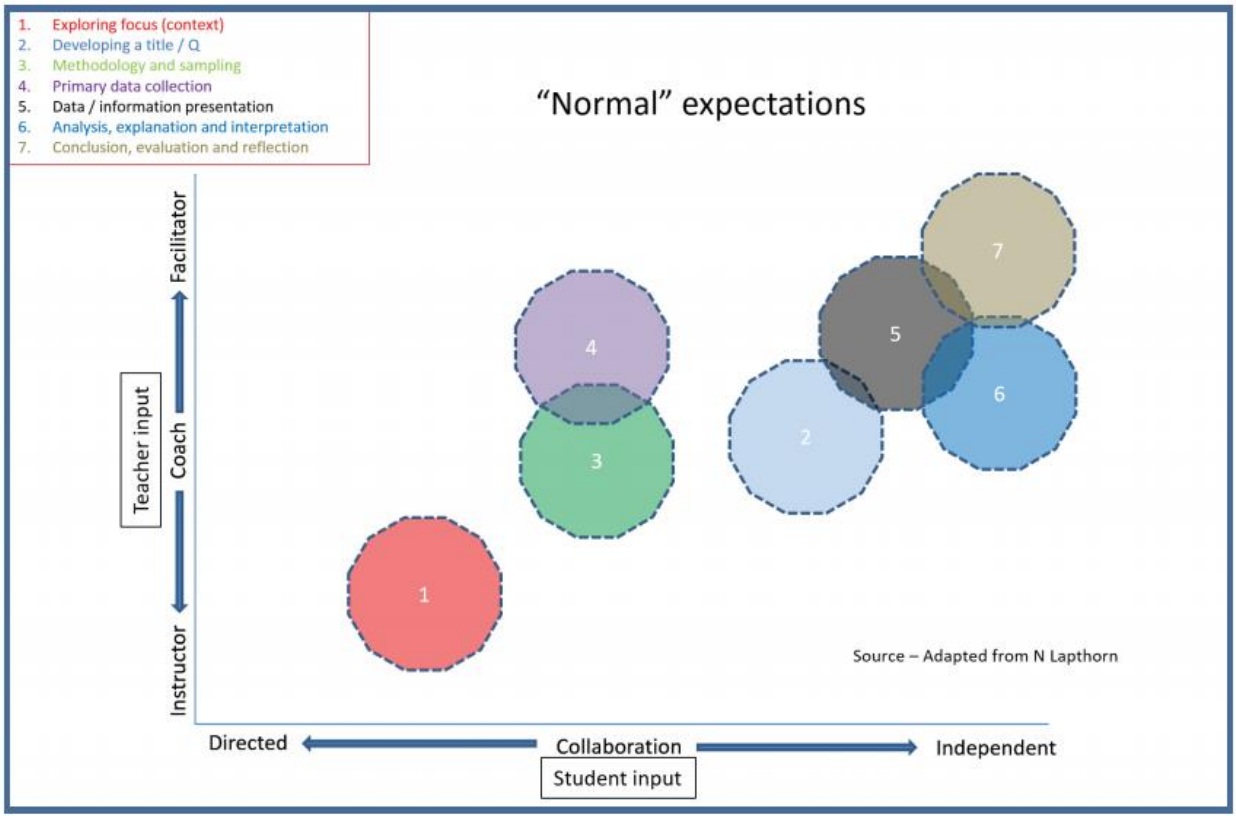


Figure 25: Stages in the enquiry – teacher vs student input
Source: N Lapthorn / Pearson GCSE and A level Geography Fieldwork Guide (2016)

Additionally, this initial checklist might be useful for students in terms of thinking more broadly about simulated project work, where resources such as maps and photographs are given to students working in small groups.

- Is the work geographical and linked in a meaningful way to some area of content within the specification?
- Is the topic focus something that is of interest to the student? Are there any personal connections to the proposed place, environment and people?
- Will the investigation be manageable in terms of scale, time, equipment, location, accessibility and transport?
- Is it local (i.e. small) in scale and achievable?
- Does the initial topic research indicate there will be sufficient high-quality supporting data and information?
- Does the work provide links to other geographical topics and issues so that it can be framed against a 'bigger picture' or systems backdrop?

Teachers may decide to have a 'projects and research' week early in the course to address some of these ideas, where students are both facilitated and coached in small groups to create an atmosphere of discussion and enquiry.

There are obviously opportunities within the teaching of the topic content where links to fieldwork, skills and enquiry can be made. This might include access to data, information and research literature, for example, which helps to deepen understanding of the topic while at the same time developing quantitative and wider fieldwork skills. See pages 'Planning, managing and delivering field trips with an AS focus' for additional useful support ideas.

ii. Discovery fieldwork

Discovery fieldwork traditionally involves the teacher taking a calculated risk by acting as an 'animateur'. In this role the teacher provides an opportunity and encouragement for students to explore an environment for themselves. The idea is to first observe and then to discover, i.e. 'looking and seeing'. Significantly, outcomes and even locations are determined by the students, not the teacher. This is well written about and a number of references can be found online, e.g. https://www.geography-fieldwork.org/a-level/before-starting/planning/types-of-fieldwork/ and http://www.rgs.org/nr/rdonlyres/90709efb-aa7f-4fe6-9a2

The emphasis of discovery fieldwork is on exploration and the development of independent learning skills. Typically, students are given the opportunity to use generic tools and techniques (for example, taking photographs, making observations, taking notes or even collecting physical objects), driven by their own curiosity. As they discover features in an environment, they develop a sense of where they are and begin to generate ideas and questions for further discovery (Figure 26). The results are invariably unpredictable but likely to be individual.

This discovery fieldwork approach can be programmed into the early part of a residential trip, or as part of an afternoon of activity in the local town or even the school grounds.

Figure 26: Discovery fieldwork. No clipboards in sight! Students are looking, exploring and thinking as part of a discovery activity
Source: David Holmes / Making Geography Matter

Discovery fieldwork can be refined to produce tighter outcomes if desired, i.e. specific broad themes. In an urban environment, for example, these could be focused around the needs of local people, visitors' expectations, globalisation, homelessness, pollution, energy, planning,

shopping quality, etc. Additional coaching may be required here to help students focus on one or more of these aspects. The specification should be used to provide a link and to anchor ideas that might be investigated.

Appendix 2 of this guide includes a range of 'Discovery Worksheets' that can be used to help stimulate discussion around the specification content. The worksheets can be used with students during pre-fieldwork planning or in the field as a framework for starting to think about topics they are interested in and investigation titles. Students could select one of the big geographical concepts they are particularly interested in, e.g. inequality, globalisation, identity, and start to ask geographical questions about the place they are in. The worksheets will also help students understand how their local, small-scale fieldwork is relevant to big, overarching geographical concepts and wider geographical debate.

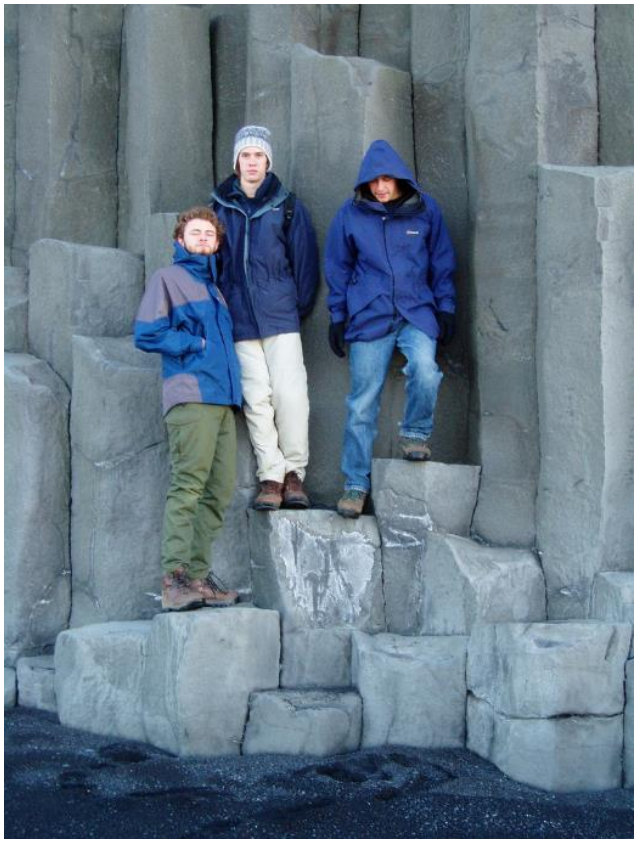
iii. Coming up with a possible idea

Coming up with an individual geographical idea or focus is perhaps one of the most challenging aspects of the independent investigation. Discovery fieldwork is one way to support students, but the skills of 'questioning' should also be seen as integral to the teaching of topic content so that students develop confidence and competence.

There are several different models as to how broad themes and an individual title / focus could be established within the context of teaching and course delivery – Figure 27.

Approach	Comments
Residential experience with 'tasters'	The trip has two or three days of fieldwork experiences and tasters which front the visit in different locations, giving students ideas for their own individual pathways to enquiry. Project proposal forms might need to be developed and approved whilst on the trip. In a slightly alternative model, students might decide to refine the residential experience and complete a similar / comparable piece of work on their own in the summer holiday.
Classroom-based exploration	Using resources and local experience of places, students begin to devise possible themes or questions. The Discovery Worksheets sheets could be used as a stimulus (Appendix 2). Students may do this in preparation for visiting known locations, or as part of preparation for a residential trip. Students would likely complete their proposal form prior to any actual fieldwork, which might be undertaken either as a group or individually.
Pilot survey / mini-trip short-burst embedding the discovery-fieldwork approach	A morning or afternoon local trip is used to stimulate curiosity, ideally with an opportunity to visit both a physical and a human environment. Discovery fieldwork (Figure 26) provides an opportunity for awareness, discovery and acclimatisation. This might lead to some more focused group work, discussion and a subsequent literature research to help establish the validity of possible themes and ideas.

Figure 27: Possible models to generate topics and a focus for study



Figures 28a and 28b: Students are given space and time to think, reflect and explore; even have a go at using some equipment without any pre-determined instructions or outcomes

Source: David Holmes / Making Geography Matter

Investigations must show individuality. The closed task pathway of the legacy controlled assessment experience – where a title or task is given and activities are devised by the teacher to achieve pre-determined objectives – can be useful for developing skills earlier in the course. But it is not an appropriate strategy for creating individuality in the independent investigation. The likely outcome of such an experience would be both simplicity (or 'truisms') as well as a lack of individuality, since students will follow set instructions. Adopting this model means the enquiry process is largely closed down.

iv. Embedding confidence in fieldwork & enquiry skills

Students also need to be supported in the development of skills and competencies in fieldwork and enquiry skills, especially those associated with enquiry design and approaches to sampling (e.g. Figure 29). This 'enquiry toolkit' needs to be progressively built up, ideally over the course of KS3 and KS4. The principles for developing skills associated with independent learning and critical thinking relate to many aspects of the KS3 and GCSE Geography curriculums.

Part of the knowledge might also include reference to risk assessments (implicit within the A level NEA). Again, skills and competencies can be developed in relation to health and safety as part of the course, when teaching about different topics, for example. Students will need to think very carefully about lone work practices, for example, especially in places with unpredictable hazards (Figure 30).

The RGS have free advice on their website about health and safety and risk assessments which will be useful to help support students.

There are also a number of recommended publications that can be used to support the more technical aspects of investigation, especially fieldwork design and sampling. These can be obtained from the Field Studies Council and the Geographical Association.

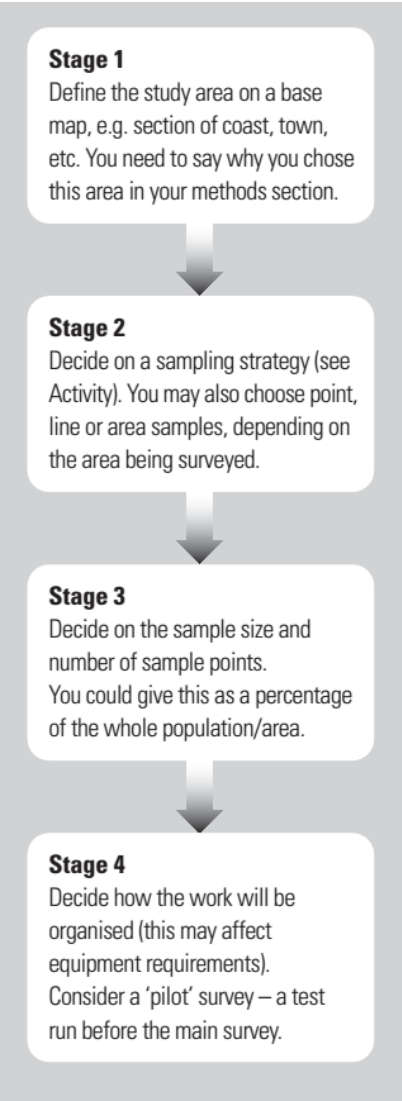


Figure 29: The stages in sampling
Source: Edexcel GCSE B Controlled Assessment Workbook

Figure 30: Cliff falls represent a very real risk on some parts of the coast and should not be underestimated Source: David Holmes / Making Geography Matter

Pearson have also produced an AS and A level Geography: Maths for Geographers guide which is available as a free download to support students with a range of numerical and data-processing skills relevant to their enquiry.

Figure 31 shows one possible model of delivery of enquiry skills that are needed both before and after the field trip. This model assumes that students are undertaking some of their fieldwork on a series of days out in the summer term, and then collecting their own individual data in the summer holidays. The model is an embedded one where skills are taught alongside content, as well as allowing students time to do individual writing-up.

	Autumn Y12	Spring Y12	Summer Y12	Summer holidays	Autumn Y13	Spring Y13	Summer Y13
Course content							
Fieldwork			Group	Individual	Write-up		
Enquiry skills							
NEA Marking							

Figure 31: An example of a delivery model where students are given time for writing-up and for being taught enquiry skills

v. Linking possible focus to a specialised concept

The Edexcel A level Geography specification includes reference to a number of core or specialised concepts. In total, there are 14 – see Figure 32.

Synoptic themes within the compulsory content areas

This specification contains **three** synoptic themes. These are over-arching themes designed to help students make links between different geographical themes, ideas and concepts. The synoptic themes incorporate specialist geographical concepts, namely: causality, systems, feedback, inequality, identity, globalisation, interdependence, mitigation and adaption, sustainability, risk, resilience and thresholds. The synoptic themes are highlighted in the specification in ***bold italics***.

Figure 32: An extract from the specification (page 9) where specialised concepts are contextualised along with their synoptic importance

The specialised concepts are synoptic. They are included in the revised AS and A levels because of their relevance to 21st-century geography and its associated themes. They are the 'language' that is used by professional geographers and academics. Sometimes their meaning can be complex, cross-cutting (i.e. synoptic or linking physical and human geography) as well as sophisticated. Although many of the concepts can be linked to either broadly physical or human topics, there is also considerable overlap. Take the example of threshold, for instance. Thresholds in physical systems are generally (critical) tipping points (Figures 33a & 33b), after which the system shifts radically and potentially irreversibly into a different equilibrium state. But the same idea could be applied in human geography – consider its relevance to the subject of population pressure within an area. There may be a 'threshold' population which, if it is exceeded, brings about a change in the underlying conditions of that area.

The inclusion of specialised concept linked to fieldwork *could* add an extra dimension or layer of sophistication that helps make the NEA both more contemporary as well more relevant. Figure 34 provides a few examples of concepts and links to topics, but there are many more that can be explored. The themed Discovery Worksheets (Appendix 2) also provide links to the specialised concepts. Clearly it is optional whether to include linkage to a concept, but it might give some students more room for discussion and evaluation. In relation to Figures 33a and 33b, for example: 'Is there a threshold size and shape for scree movement downhill?' and 'An investigation into the varying threshold carrying capacities of this recreational space'

Figures 33a and 33b: Threshold concepts may be both relevant and measurable in both these contrasting environments
Source: David Holmes / Making Geography Matter

	Interpretation	Examples of individual investigation themes
Resilience	The capacity of a system to experience shocks, while retaining essentially the same function, structure, feedbacks and identity.	• Flood risk and resilience • Economy of a town and resilience • Ecosystem resilience and threats
System	Systems thinking is the process of understanding how those things (parts) which may be regarded as systems influence one another within a complete entity, or larger system (boundary).	• Inputs, outputs and stores within a local sub-catchment • Economy of an urban centre as a system • Understanding carbon flows in a woodland ecosystem
Identity	Identity is about ways in which people connect to various places, and the effects of such bonds in identity development, place-making, perception, and practice. It's to do with belonging, meaning and attachment at a personalised level.	• Place identity as seen by tourists • The identity of rural areas vs urban • Connections to place with different ages / cultures

Figure 34: Examples of specialised concepts and possible individual investigation opportunities

vi. Further guidance

A number of sources, online and written, may have information to help contextualise the fieldwork and add relevance to the issue / topic being studied. Some examples are provided here. There are also additional sources in the References section.

The Field Studies Council have an excellent fieldwork http://www.geography-fieldwork.org . They also have a range of specialist identification guides (fold-out charts) for many of the fieldwork topics in the specification, e.g. http://www.field-studies-council.org/publications/pubs/geographical-investigations.aspx

This gives the locations of the FSC centres in the UK http://www.field-studies-council.org/centres.aspx Of course, centres can choose other providers either in the UK or overseas.

You will also find some useful information from the Barcelona Field Studies website http://geographyfieldwork.com/Fieldwork%20Methodology.htm They also run specific Edexcel AS and A level field courses.

The RGS (Royal Geographical Society) have a directory of international field centres ('World Register').
http://www.rgs.org/OurWork/Fieldwork+and+Expeditions/World+Register+of+FieldCentres/World+Register+of+Field+Centres.htm

Geofile and Geofactsheet. These are publications on a range of topics. Although aimed at an AS / A2 audience, they can provide some useful background reading to contextualise a topic, area or skill.

TopicEye Geography is a magazine series for students written by leading authors and examiners. There may be some resources here that help contextualise the course and fieldwork / research http://crossacademe.co.uk/series/23/a-level-geography

Geography Review is now available online and searchable through an online magazine subscription service. Look out for the skills and practical geography section. https://www.hoddereducation.co.uk/Geography#&pid=2&limit=true&type=0 (This is the link to their magazines page.)

a. Before the field trip – short-term, in the weeks before the field trip

i. Virtual field trip (setting context)

Just like AS, a virtual field trip can be used as a simulation exercise. Use different visual resources – cartographic and graphical – to let the student become immersed into the range of decisions that have to be made when planning a suitable location for study. Just as in AS, these could include decisions about: access, terrain, land cover, drainage, land ownership, proximity to roads and access points etc.

Teachers might want to give the students a choice of the potential fieldwork locations at different scales. The more experienced the learner (especially if this is a second or third field trip, for instance) the greater the number of decisions they might want to make and the larger the choice of area (Figure 35).

Small area site, e.g. output area within a single town	**1**	Here, decisions will be more straightforward in terms of design since the focus should be based on sample spacing and frequency.	Increasing complexity of decisions 
Intermediate area site, e.g. small sub-catchment scale	**2**	In addition to (1), decisions will also need to select suitable areas for study, e.g. consideration of access, time between sites, health and safety etc.	
Largest area, e.g. 10s of km^2 with a mixture of land-use and land type	**3**	In addition to (1) and (2), decisions may also need to consider nature and type of data (linked to a broader focus) as well as perhaps temporal decisions.	

Figure 35: Examples of different scales that can be used to set and 'test' the context of a virtual fieldtrip

ii. Supporting student research

Literature research and background information are vital in the support of the individual investigation. In many respects the background information kick-starts the process of 'searching for answers' before the main part of the enquiry or fieldwork begins. Literature research and information help to develop a purpose and context. They also help to establish whether the theme or idea is likely to be geographically valid. Many projects have failed in the past since students have not been able to demonstrate a geographical setting.

Literature and background information may be utilised to:

- help set the context, e.g. location details (geology map, define census output areas, large-scale OS maps for locations etc.)
- explore geographical models which provide representations of reality
- research geographical theories that predict outcomes and provide a testable element to an investigation
- get the most up-to-date research and information about a topic or subject.
- explore parallel examples, research and other places
- gather local opinions, e.g. from social media, local blogs, newspapers and forums.

Teachers will need to work with students about how to read and synthesise information as well as demonstrating issues around plagiarism.

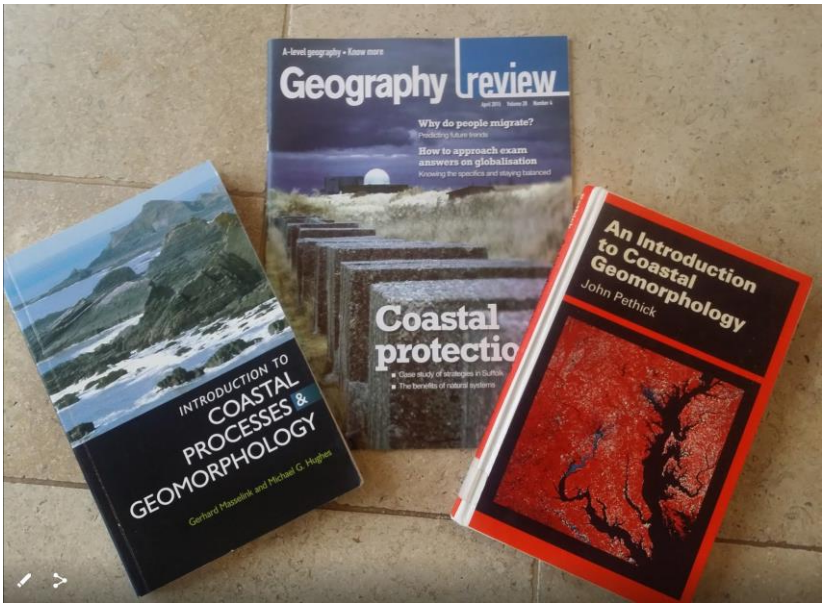


Figure 36: Research using textbooks and specialist magazines may reveal alternative models and ideas that can be tested
Source: David Holmes / Making Geography Matter

Students need to keep an accurate record of all sources, and to use a consistent referencing style such as Harvard in the independent investigation. There are various places that tell students how to do this – here is an example of a 'Harvard Referencing Generator'. Alternatively, students can use in-built tools that can be found in popular versions of word-processing software e.g. MSWord (see Figure 37).

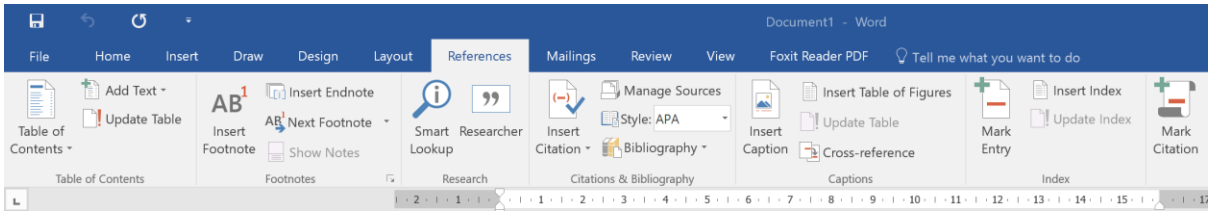


Figure 37: Some word-processing programs have the ability to insert and create references. These can be established early in the enquiry sequence so that there is an electronic record
Source: Screenshot from MS Word / Office 365.

Each reference should contain in a sequenced order: (1) Name of author(s), (2) Year published, (3) Title, (4) Publisher, and (5) Pages used. This approach is modified for example if you are using a newspaper or internet source.

- Last name, First initial. (Year published). Article title. *Newspaper*, [online] pages. Available at: url [Accessed Day Mo. Year].
- Last name, First initial (Year published). Page title. [online] Website name. Available at: URL [Accessed Day Mo. Year].

A range of research skills should be integrated into teaching and learning geography. Closer to the time at which fieldwork will be undertaken these must be refined so that data / information selection takes place with both confidence and relevance. In many ways this is a similar set of skills that were needed for the legacy Unit 4 – Researching Geography. Figure 38 shows examples of different types of student research skills.

Basic	More advanced
Referencing sources	Using a Harvard (or similar) referencing technique
Recognising bias	Being able to explain different types and causes of bias
Effective searching	Using advanced searching techniques such as Google Scholar and Boolean searching
Recognising primary and secondary sources	Differentiation between primary, secondary and tertiary / hybrid and recognising complexity
Downloading data, e.g. CSV files	Interrogating, selecting and filtering complex online data sets
Keeping records of sources.	Managing sources using local and online tools to keep accurate records

Figure 38: Examples of student research skills – basic and more advanced

Students should be encouraged to use:

• Books (specialist texts relating to various aspects of geography).
• Articles (e.g. from specialist magazines such as *WideWorld*, *National Geographic*, The *Economist*, *New Scientist*).
• Newspapers (most are available online with free access – www.thebigproject.co.uk/news/ is a good website from which to access them).
• Companies' and organisations' websites (specialist reports or marketing information).
• Internet blogs and forums (information on what people think about particular issues – some are local, others are associated with certain newspapers and TV programmes).

- Websites used for maps and digital images.
- Films, videos and DVDs (and transcripts of programmes).
- Non-published correspondence (e.g. letters and emails).

iii. Focus on a title

Students may feel that choosing a title is a very important part of the enquiry process. In reality it can actually be completed both through reflection as well as retrospectively, although it is essential that the student has a focus, i.e. a clear idea of what the study will involve. The title and focus will have been at least considered as part of the proposal form evaluation process.

The focus should be a refinement of the initial idea and must strongly link to the background research whenever possible. There are numerous examples in legacy controlled assessment, for instance, when this has not been followed and the project starts from an initial position of confusion and irrelevance. For example, a student may establish a focus such as:

'What factors influence rates of cliff recession in area C?' But then measure stone size and coastal defences without referring to how that fieldwork data is in any way related to the overall focus.

Perhaps a more significant decision is how and whether to develop the focus into a question, a hypothesis or even an aim. Figure 39 explores the differences between them. Teachers may wish to model to students how an aim can be translated into research questions and/or hypotheses.

Aims	Research questions	Hypotheses
A statement of what that project / investigation is setting out to achieve. It must be geographically sound and achievable.	A **question** that is asked (in a question format), which links with the overall focus title and **can be used as a way of subdividing the title.**	A hypothesis is a statement whose accuracy can normally be tested objectively using **scientific methodology.** **Null and alternative hypotheses are normally used in connection with statistical tests (Chi-squared and Spearman's Rank), but not all hypotheses need to use statistical tests.**
An investigation into the reliability and variability of regional weather forecasts through comparisons with local primary data in area D.	*How and why do beach profiles vary between winter and summer at beach N?*	*There are significant differences in perception of the high street based on gender.*
An investigation into the diurnal pollution variation in area W of city V.	*To what extent are golf courses an environmental, economic and social asset in rural area X?*	*Shingle beaches have a steeper gradient than sand beaches.*

Figure 39: Exploring the differences between aims, research questions and hypotheses

The choice of hypothesis vs question vs aim should be a personal and individual one decided by the student. However, students should be made aware of the differences between the approaches, and try to select a title (choice) which is appropriate to the focus of their work. The following ideas might be relevant during that decision-making process:

- An 'issues-based' NEA inevitably considers a complex idea or argument. Does the title take into account this difficulty and allow for sufficient depth of argument?
- A hypothesis may not be suitable in every situation. It may only be a good idea to use a hypothesis where there is appropriate numerical data. A hypothesis can just be used as a tool for part of the analysis rather than the overall focus at the beginning.
- Should questions be subdivided? If they are, the focus can become more manageable, but it runs the risk of becoming too wide and unfocused. Studying several wider aspects can make it harder to reach firm conclusions.
- The integration of a specialist concept might help the choice of title.
- Is there a maximum or minimum number of words for a good title / aim / question / hypothesis?

The worst titles are those which are basic and largely non-geographic in their focus, such as:

'*A study of homelessness in town N*'

A refined and much better title (using a question) could be:

'*What are the most important factors controlling distribution of homeless people in town N?',* or a slightly longer aim:

'*An investigation into the range of factors that cause spatial variation in the distribution of homeless people in town T*'.

Some students may not want to use the traditional deductive pathway when developing a title and focus (Figure 40). Instead they may want to select a more inductive (reflective) approach. In this latter instance the researcher is not sure about the type and nature of the research findings until the study is completed. Aims and hypotheses would be developed later.

Inductive	**Deductive**
The inductive approach starts with observations. Theories are formulated towards the end of the research and because of observations. • No hypotheses can be found at the initial stages of the research and the researcher is not sure about the type and nature of the research findings until the study is completed. • Induction begins with observations and seeks to find a pattern within them	A deductive approach is concerned with developing a hypothesis (or hypotheses) based on existing theory, and then designing a research strategy to test the hypothesis. • The deductive approach follows the path of logic most closely • Deduction begins with an expected pattern that is tested against observations

Figure 40. Inductive vs deductive styles. Depending on the nature of the topic chosen, students may choose either of these pathways
Source: http://research-methodology.net/research-methodology/research-approach/inductive-approach-2/ and http://research-methodology.net/research-methodology/research-approach/deductive-approach-2/

b. **Field trip – teacher acts as both a coach and facilitator**:

i. Teacher as coach – supporting the enquiry process

The role of the teacher as coach (and indeed mentor) has already been discussed. During the field trip the teacher must be careful to define their role as enabler and not leader.

Throughout the process students need to be reminded of the purpose and relevance of enquiry, as well as the need to understand how the mark scheme is strongly influenced by the different stages (Figure 41). Failure to deliver a *complete* enquiry may have negative impacts in terms of the marks awarded, since different sections will show different levels of completeness.

		Purpose of the Independent Investigation (12 marks) (AO1: 4 marks, AO2: 4 marks and AO 3: 4 marks)
Level	**Mark**	**Descriptor**
	0	No rewardable material.
Level 1	1–4	• Demonstrates isolated elements of geographical knowledge and understanding of location, geographical theory and comparative context, which are frequently irrelevant or inaccurate. (AO1) • May attempt to apply understanding to find links between the investigation's context and a broader geographical context but links are irrelevant with frequent inaccuracies. (AO2) • May attempt to investigate frequently irrelevant and narrow range of geographical sources in order to identify/obtain geographical information and data that is frequently inaccurate and only occasionally supports the investigation; the aim, question or hypothesis is generic or unlinked to research information, and provides an unfocused framework for investigation, with flawed consideration of manageability and/or scale; planned enquiry process is limited in clarity and structure. (AO3)
Level 2	5–8	• Demonstrates geographical knowledge and understanding of location, geographical theory and comparative context which is relevant but narrow or incomplete, and may include some inaccuracies. (AO1) • Applies understanding to find links between the investigation's context and a broader geographical context; links are mainly relevant and coherent but may include some inaccuracies. (AO2) • Investigates a range of mainly relevant geographical sources in order to identify/obtain mainly accurate geographical information and data that supports most parts of the investigation; research information is used to construct a generally valid aim, question or hypothesis that provides a mostly appropriate framework for investigation with some consideration of manageability and/or scale; planned enquiry process is adequately structured and clear. (AO3)
Level 3	9–12	• Demonstrates accurate and relevant geographical knowledge and understanding of location, geographical theory and comparative context throughout. (AO1) • Applies understanding to find coherent and relevant links between the investigation's context and a broader geographical context. (AO2) • Investigates a wide range of relevant geographical sources in order to identify/obtain accurate geographical information and data that support the investigation; research information is used to construct a justified aim, question or hypothesis that provides an appropriate framework for investigation at a manageable scale; planned enquiry process is logically structured and comprehensive. (AO3)

Figure 41: An extract from the Pearson Edexcel A level Geography NEA mark scheme. Marks are weighted very differently in different sections

Teachers should plan the series of fieldwork activities so that there is a good range of both physical and human fieldwork topics, providing ample choice for students. As indicated with the fieldwork models, there is a range of possible options for generating sufficient 'space' for individuality. Remember that some places, although originally planned as 'physical' or 'human', can actually generate a range of integrated fieldwork options (Figure 42), especially if considered over a more extended period of time, e.g. two consecutive days. Development of skills and group work can work well to build confidence in data collection and fieldwork design. This can then be used and adapted individually as a later part of the field trip (e.g. day 4) or subsequently.

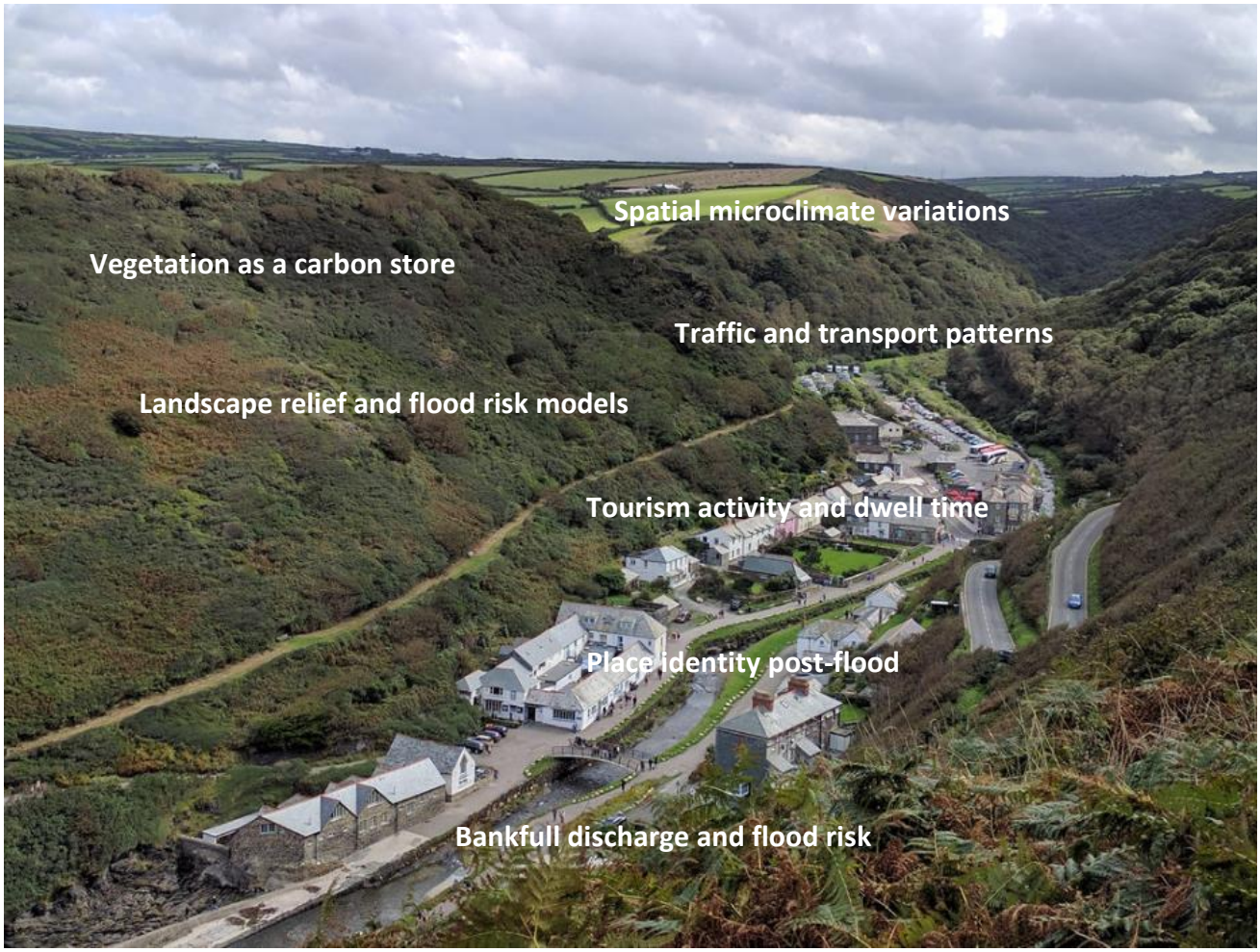


Figure 42: Opportunities for both physical and human mini-projects and group fieldwork in a 'mixed' environment could run over two days
Source: David Holmes / Making Geography Matter

Refer to the Discovery Worksheets (Appendix 2) for more examples of project themes for a range of different locations.

If students are less familiar with qualitative approaches for example, then at this point in the fieldwork process students could be introduced to, and then discuss, some of the methodologies available (see Figure 43). This would also be an ideal opportunity to consider using discovery fieldwork.

Approach	Details
Focus group	A small group of people are asked about their perceptions, opinions, beliefs and attitudes towards a place, service, concept, strategy etc.
Interview	Often face-to-face over a period of several minutes with open-ended questions. A recording or transcript will be essential to allow future data-processing.
Historic texts and images	These can take a variety of forms, such as brochures, newspapers and even old postcards (especially good for coastal settlement change).
Oral history	The collection and recording of historical information using tape / video recordings of interviews with people who have personal knowledge of past events. This will often be conducted by interview, but it may be possible to find oral histories from sources such as YouTube.

Perception studies	Might include mental maps, interviews etc. to extract attitudes between visitors and local residents, for instance.
Participant observation	A low-key observation technique – making notes and documenting the type, movements and activities of people.

Figure 43: Examples of qualitative approaches. These may need a pilot survey before use

ii. Literature research

The hunt for background information kick-starts the process of 'searching for answers' before the student has stepped out and started to collect any primary or first-hand fieldwork data. This is discussed as part of the pre-fieldwork planning along with referencing.

Fieldwork and literature research might also be considered side by side at this stage, each helping to inform the other in a reflective feedback process (Figure 44). Subsequent fieldwork activities (i.e. different days / places) may lead to more refinement of (or different) research as new ideas and fieldwork findings emerge. In other words, it is an iterative process. This approach is no doubt more complex, but is certainly a more thoughtful way of working, allowing fieldwork and research to be more linked.

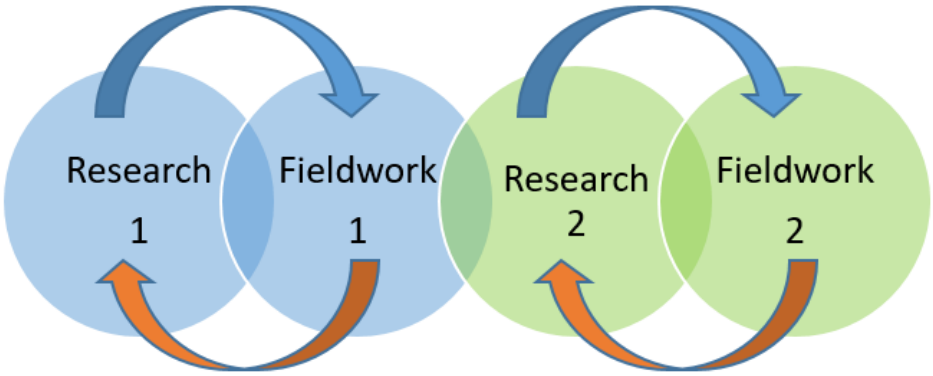


Figure 44: Thinking about fieldwork and research as reflective parts of the enquiry process

Once again, as part of this ongoing reflection and adaptation, students should be encouraged to use a range of literature and research sources.

iii. Teacher as coach, helping students to evaluate design and methodological approaches

Equipping students with a metacognitive 'toolkit' to develop high-quality evaluations should be seen as a set of skills developed over the first year as well as ideas that can be reinforced during the actual fieldwork. Such tools might for example be developed during the development of AO2 skills, which account for 40% of the A level. In topic 4.2A – Regenerating Places, students are required to consider place change in a number of geo-demographic characteristics, e.g. deprivation, employment, crime etc. These could be explored using GIS websites and visualisation, which helps students understand about data, and information and sources. This in turn helps with the processes of analysis and evaluation (AO2), as well as seeing linkage to the independent investigation through aspects of design and primary or secondary data and information in design and methodologies.

Students should be encouraged to evaluate both the design and methodology as an integral part of their fieldwork. Reflective evaluations can be completed at the fieldwork site and

alongside the data-collection process. Recording sheets can be individually adapted to include space for writing about sources of possible errors.

- Errors are the difference between the results that was found (i.e. the data collected) and the true value.
- The true value is the value that would be obtained in an ideal measurement.

Figure 45 shows the three possible sources of error. Students would be expected to try to uncover and understand the possible sources within either the enquiry design or methodology where such errors might be introduced. And what impact such areas might have in terms of the quality of the outcome and true value. This may be one of the key indicators of a top-quality evaluation. True value is the correct and accurate value which in fieldwork is very difficult to determine experimentally as true values of not usually obtainable.

Measurement error	Mistakes made when collecting the data, such as a student misreading a thermometer, or incorrect plant identification.
Operator error	Differences in the results collected by different people, such as different people giving different scores in an environmental quality survey.
Sampling error	Local differences meaning that one sample or measurement gives slightly different results to another sample, e.g. measurements of infiltration can vary within a very small spatial area, even though the measuring technique has been applied in exactly the same way.

Figure 45: The three possible sources of fieldwork error
Source: adapted from FSC (2016) *Geographical Investigations.*

There is a useful link here to sources of experimental error from Carlson (2002). The Field Studies Council also has a description of sources of error in its fold-out guide: Geographical Investigations (2016).

Evaluation of design and methodology might also include a consideration of different types of data, e.g. qualitative vs quantitative, and how these in turn may affect and influence outcomes. Some independent investigations will involve the collection of both qualitative and quantitative data, but the balance will very much be determined by the nature of the focus. Others may be purely quantitative or conversely entirely qualitative. Qualitative data should no way be thought of as 'less good' compared to quantitative. Sampling and design will also likely be evaluated. Figure 46 provides an overview to the different types of sampling and some considerations. Sampling is also considered in Section 11 of the AS and A level Geography: Maths for Geographers Guide. Data-presentation techniques are also likely to be evaluated, so students should be aware of the strengths and limitations of their chosen techniques and address these as they evaluate their methodology.

Method	Design description	Considerations
Systematic Sampling	Samples are chosen in a systematic, or regular way, e.g. every 10m or every hour, or every 7th person. **This is used when the environment or population has an expected environmental gradient or change (spatially or temporally), but the degree of change may be uncertain.**	Can give good coverage (spatially of an area) and is straightforward to design and undertake. But has the potential to miss areas when surveying along particular points or lines, which will lead to an under- or over-representation of certain groups or features in an area.
Stratified sampling	Samples are taken at pre-determined places or times, based on an understanding	This approach reduces the potential for bias in areas of variation, but the sampling design frame needs to take

	of the study area in terms of groups, individuals and sub-groups. **This is used when the environment or population has an observed environmental gradient or change (spatially or temporally), and the expected change can be used to inform the sampling procedure.**	account of the underlying characteristics of the area or population in order to make the correct selections. In some instances, it can be difficult to get data on groups in order to stratify the sample (e.g. 'age' of tourists visiting a town).
Random sampling	A common misconception is that random sampling involves interviewing the first person who comes along – this is not sampling. Random sampling involves using random numbers to generate times and/or coordinates for when a sample should be taken. **This is used when the environment or population has no known environmental gradient or is thought to occur at random.**	This sampling approach should minimise any elements of human bias and therefore sample error. However random sampling can leave gaps in the sampling design frame, or lead to an undesirable clustering of points. Random sampling can also be time-consuming to undertake, compared to stratified or systematic sampling.

Figure 46: Considering design and sampling

Also see this link to FSC for more details: https://www.geography-fieldwork.org/a-level/before-starting/methods/sampling/

Reliability, accuracy and validity are discussed in more detail within the context of experimental error.

iv. Teacher as facilitator – supporting data collection

As facilitators, teachers are expected to support students in their data collection, but this support should to be limited to logistical and safety considerations. Teachers must not for example advise students exactly how and where to collect data; this would clearly reduce the degree of independence.

The guidance states, however, (page 98 of the specification) that:

> Candidates may collaborate when planning and selecting methodologies / sampling strategies.

and

> Primary data collection may be carried out individually or in groups

Group vs individual fieldwork should be considered, taking into account: volume of data, its velocity (i.e. how quickly it is changing), the safety of the location, and the timing of the data collection. These implications are important whether this is part of a residential trip for instance, or when groups / individuals wish to collect data in a similar (geographic) location. Clearly schools and colleges have a duty of care to manage learners' safety and seek advice from relevant individuals, stakeholders as well as policies in order to protect young people.

The joint Awarding Body Guidance states the following:

- Students should only collect primary data once they have designed their investigation and completed the independent investigation proposal form.

• Students cannot use data that they have collected previously as the primary data for their own investigation.
• Students can use data that they, or another cohort, collected previously as secondary data if they independently arrive at the decision to do so and, where relevant, approach their teacher to request access to this data.
• Students should reference the use of this data in their written report as they would with any other secondary data they have independently sourced.
• Students are also required to consider the ethical issues which are embedded in any study that involves the collection, analysis and representation of geographical information about human or physical communities.

The most common ethical dilemmas in human geography focus around participation, consent, and the safeguarding and confidentiality of personal information (Figure 47). Here is also a link to a free resource: *Ethical Issues in Qualitative Research*, which has useful reading.

Figure 47: There are several ethical considerations when carrying out interviews to protect the rights of the respondent. Equally, there are some places where students may have to seek permission to take a picture, especially places like shops and shopping centres
Source: David Holmes / Making Geography Matter

In physical geography, the main ethical considerations are around consent and access to study sites and potential damage. This could include concerns over trampling, damage to plants and animals or possible pollution (including litter, contamination) of study sites. In most instances, careful planning should effectively reduce the impacts and effects to a negligible level.

c. After the field trip – teacher as facilitator

i. Practical, generic guidance on the written report: structure and format

Once again, the teacher needs to act as both facilitator and enabler when it comes to report-writing. They should do some carefully planned steering so that students have the required skills and knowledge to complete the writing-up, but without providing individual feedback / instructions, either written or verbal, to individuals.

The report likely comprises of several sections, and will probably follow the format of the mark scheme in terms of section dividers (although it doesn't have to). Figure 48 breaks down the report into sections and provides a description along with a range of possible word counts for each section, based on the marks available.

	Stage	Key extracts from Edexcel NEA mark scheme
1	**Purpose of Independent Investigation** (12 marks) 400–600 words	• relevant geographical knowledge and understanding of location, geographical theory and comparative context • relevant links between the investigation's context and a broader geographical context • uses a range of relevant geographical sources in order to identify/obtain accurate geographical information and data that support the investigation • constructs a justified aim, question or hypothesis that provides an appropriate framework for investigation at a manageable scale
2	**Field Methodologies and Data Collection** (10 marks) 350–550 words	• designs a valid sampling framework to achieve outcomes in focus • considers timing and frequency of observations • considers ethical dimensions of data collection • selects appropriate methods which are relevant to aim
3	**Data Representation, Analysis, Interpretation and Evaluation of Techniques and Methodologies used** (24 marks) 1200–1500 words	• uses appropriate diagrams, graphs and maps, using technologies to select and present relevant aspects of the investigation outcomes • uses geographical skills to analyse data in order to show evidenced connections and accurate statistical/geographical significance of data • critically examines field data (including any measurement errors) in order to comment on its accuracy and/or the extent to which it is both representative and reliable • summarises findings clearly to reach evidence-based conclusions • considers ethical dimensions
4	**Conclusions and Critical Evaluation of the Overall Investigation** (24 marks) 1200–1500 words	• accurate and relevant geographical knowledge and understanding of place and relevant theory • shows relevant links between the investigation's conclusions and a broader geographical context • considers the reliability of evidence and validity of conclusions • conclusions use evidence and link to concepts

Figure 48: Possible structure of the A level NEA write up and corresponding stages
Note the word count guidance given can be adapted and will depend on both the choice of the individual student(s) and the nature of the investigation. Work outside of the suggested ranges should not be considered as atypical.

The write-up can be managed in a number of different ways. Figure 49 shows some examples of possible models that can be adopted to support the completion of the writing-up phase.

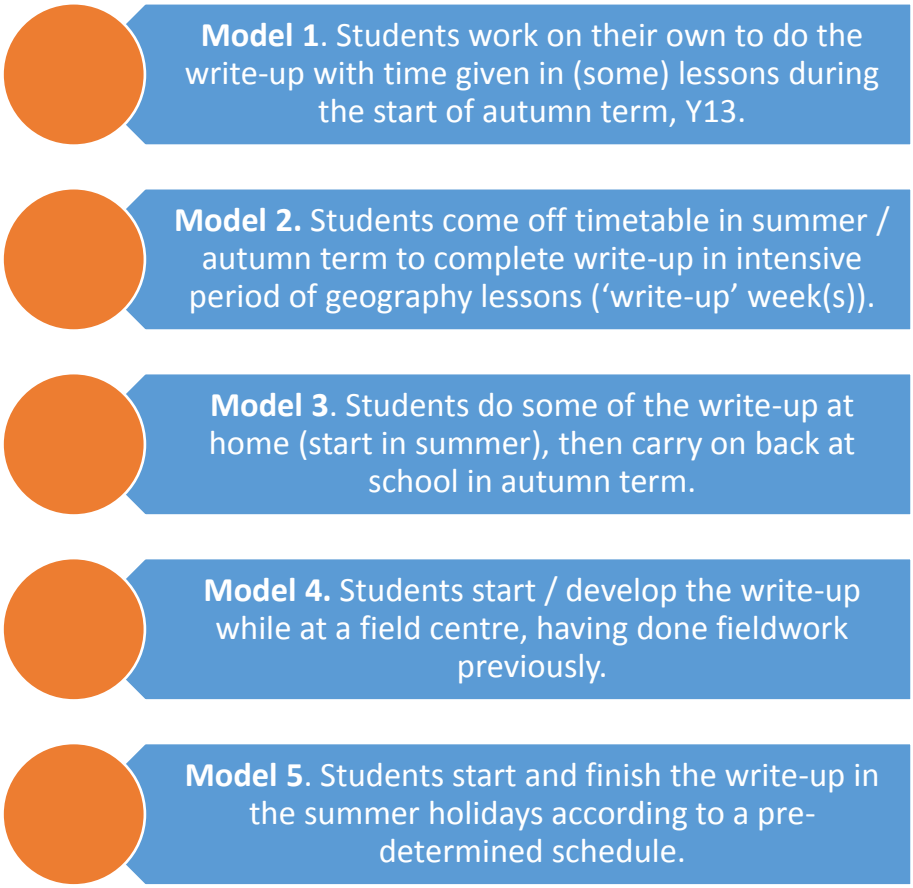


Figure 49: Examples of different ways of managing the write-up
Note these models assume a summer and autumn writing-up period, but it can be done at any time to suit students and the school.

Consideration also needs to be given for the length of time allowed for the write-up, as well as supporting students' plans and agreeing staged checkpoints for completion of certain parts of the write-up. This could also be done by the use of self-evaluation frameworks and checklists which have agreed completion stages at certain dates. For example, bi-weekly targets of stages and completion date for 1 December, Y13.

Students might be encouraged to keep their data and associated written work in a cloud-based storage system, e.g. Dropbox. Not only does this provide an automatic back-up and access from a variety of devices and remote locations, Dropbox also allows users to 'roll-back' to previous versions in the case of corrupt files and mistaken deletions.

The next pages provide more details on the various stages within the route to enquiry that can be offered as context to help students develop the necessary skills for completing their write-up.

ii. Raw → Processed data

Students should develop a clear idea of how to convert raw primary data into a processed state that can be used for the next stages, i.e. representation, analysis and interpretation. This is largely an organisational concern, but there may need to be considerations around group vs individual data for instance. Figure 50 presents an example pathway.

At this stage it would be a good idea to 'filter' the primary fieldwork data and information. In other words, students might try to identify irrelevant, unusual or possibly rogue data that might

impact on the validity or accuracy of outcomes. These errors could have been introduced by another group or individual, or be due to a variety of other fieldwork problems. The data of course might be irrelevant to the title focus.

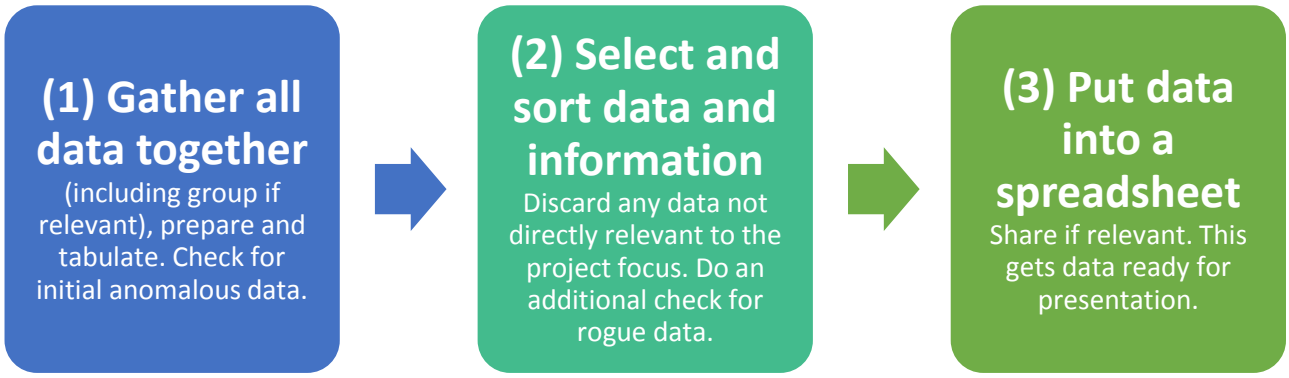


Figure 50: A pathway to process data in preparation for analysis

iii. Data representation and appropriate selection

Data presentation and representation decisions may be based around some of the following criteria:

1. The type of question(s) you are looking to answer.
2. The sampling strategy.
3. The volume data / information collected.
4. The methods of data collection.
5. The nature of your data: qualitative vs quantitative.

Data (primary and where relevant secondary) will most likely be presented via a combination of graphical (graphs, diagrams, images, tables and infographics) or cartographical (maps) techniques. Figure 51 shows some examples of the techniques that are available. The teacher as coach can encourage any additional research needed to find out more about other relevant techniques.

Type of information	**Graphical (G) and cartographical (C) techniques.**
Representation of sequenced data that changes over time	Line graphs (G) Pictograms (G) Circular graphs / rose diagrams (G)
Recorded data at different sites that has different component categories	Bar charts and histograms (G) Pyramid graphs (G) Pie charts (G) Mirror graphs (G) Multiple / compound bar charts (G)
Where measurements of side views have been taken.	Long and cross profiles (G) Cross sections (G)
Data that has been collected to demonstrate spatial variation	Isopleth maps (C) Dot distribution maps (C) Proportional symbol maps (C) Choropleth maps (C)

Representation of data with orientation, direction or bearing	Rose diagrams (G) Polar co-ordinates (G)
Continuous data (along a transect)	Kite diagram (G) Scattergraph (G) Multiple / compound bar charts (G)
Representing linkage or connections between two sets of data	Scattergraphs (G) Mirror graphs (G)

Figure 51: Examples of data representation / presentation approaches classified into graphical and cartographic

Students should be aware that the mark scheme is set to reward for the most appropriate techniques and not necessarily for either range and/or sophistication. This may be a very different situation compared to a legacy controlled assessment or other generic mark schemes that teachers have been using in the past. Below is an extract from the mark scheme illustrating that message.

'Communicates convincing conclusions that are supported by the clear and technically accurate presentation of relevant fieldwork data or information.'

iv. Analysis of quantitative and qualitative data

Students should attempt to describe data as the preliminary part of the analysis process. This may include:

(a) an initial description of any main patterns and trends

(b) further exemplification of the patterns and trends using data / information from the relevant tables, charts or cartographic evidence

(c) identification of anomalies or exceptions which deviate from the main patterns and trends.

High-quality analysis then begins to look deeper into the results. With a quantitative set of results, for example, the following checklist may be useful for students to consider:

- What is the range (or spread) of values within the data set?
- Where are most of the values concentrated (i.e. is there any clustering)?
- Are there any clear gaps between the concentrations?
- What is the shape of the distribution of the data values?
- Are there any extreme values (which may include anomalies and / or outliers)? How far separated are these from the normal range of data?

Statistical testing is not obligatory, even with quantitative data which might have been collected. Students must be selective so that the analysis allows them to demonstrate the meaning in the geography that they have found.

Students should also refer to Section 10 of the Pearson Edexcel AS and A level Geography: Maths for Geographers Guide, which provides details of a range of analytical approaches as well as the use of null hypothesis, confidence limits and significance levels. Also refer to Figure 52.

Null hypothesis	The opposite of a hypothesis (an idea or tentative theory). Inferential statistical tests aim to disprove the null hypothesis, thereby accepting the (alternative) hypothesis. The null hypothesis is usually the 'boring case'… there is no difference/no association/no correlation. The alternative hypothesis is

	usually what the evidence might be indicating … there is a difference/association/correlation.
Degrees of freedom	In carrying out the various hypothesis tests, you will come across the term 'degrees of freedom'. This is something that affects the sample size in your test. Usually it makes the sample size slightly smaller. You need to know the number of degrees of freedom in order to use the statistical tables. It is based around the number of pairs of values.
Significance levels and confidence limits	The term 'significant' has a precise mathematical definition – it concerns the reliability of the data expressed at a percentage value. For example, if we say that the information / results are significant at 95% level, this means that only 5 times out of 100 would this outcome occur by chance; 99% means only 1 chance in 100. Significance levels are indicated in published tables, usually 0.05 and 0.01 respectively (5% and 1%). A result significant at 0.01 means there is only a 1% chance the null hypothesis is correct, so the alternative hypothesis is accepted. Confidence levels are closely related to significance levels.

Figure 52: Exploring meaning: null hypotheses, confidence limits and significance levels

Data collected in the form of text and/or images (e.g. interview transcripts) can be analysed by both quantitative and qualitative methods, although qualitative analysis is likely to be a much less well rehearsed skill.

Coding is an analytical process in which data, in both quantitative form (e.g. questionnaire results) or qualitative (such as blogs or interview transcripts) is categorised to help analysis.

Words and text generated by interviews, for example, or data in a textual / photographic form, needs to be described, analysed and summarised, so coding is often a good solution here. In the qualitative context, coding is used to search the text for similar themes, ideas, concepts and key words, and then those passages are marked with a code colour. This makes it easier to make comparisons and to identify any patterns that can be investigated further. There are several different coding approaches – see Figure 53.

Coding example	Description
Polarising	Read the text and highlight any positive or negative statements – these could be used as 'soundbites' within the report or tallied to compare the number of positive or negative statements.
Polar Scaling	Takes the polarising process a step further by assessing the strength of a positive or negative statement – similar to carrying out a bipolar survey. The overall strength of positivity or negativity can be compared in greater detail.
Theming	This is identifying a number of key themes in a written text and then grouping these themes further into a smaller number of concepts. The number, or strength of comments in each theme may also be reviewed.
Categorising	The analysis of text to fit into groupings, e.g. environmental, social, economic and political impacts or longer term vs short term etc. These categories could be used to sort responses before using one or more of the techniques described above.
Linkages	The complex nature of textual information means that it may be possible to 'map' linkages between different concepts or themes. These links may be explicit in what text / respondents say, or implicit in how it is said, the way in which one point flows into another.

Figure 53: Examples of coding to analyse qualitative information

A worked coding example can be found here on the Barcelona Field Studies website. Additional examples are also provided by the Field Studies Council here. Teachers may find recent undergraduate texts in human geography useful, such as Phillips and Johns (2012) 'Fieldwork

for human geography' (SAGE), Hay (ed.) (2016) 'Qualitative research methods in human geography' – especially Chapter 18: Organising and analysing qualitative data (OUP).

v. Developing conclusions

Conclusions are a summary of all the major findings made at different stages throughout the individual investigation. No new evidence should appear at this point. The role of the conclusion is to consider the evidence from both primary data collection and secondary research, interpret meaning, draw out the implications and bring it to one overall conclusion (or series of final conclusions). Figure 54 presents a simplified flow diagram of the stages in developing a high-quality conclusion. It is also at this stage in the write up that students might also want to consider the wider geographical implications and significance of what they have found. If they have used a specialised concept, for example, this is the time when they should integrate that idea into what they have discovered. Students should critically examine their field data in order to comment on its accuracy and/or the extent to which it is representative and reliable.

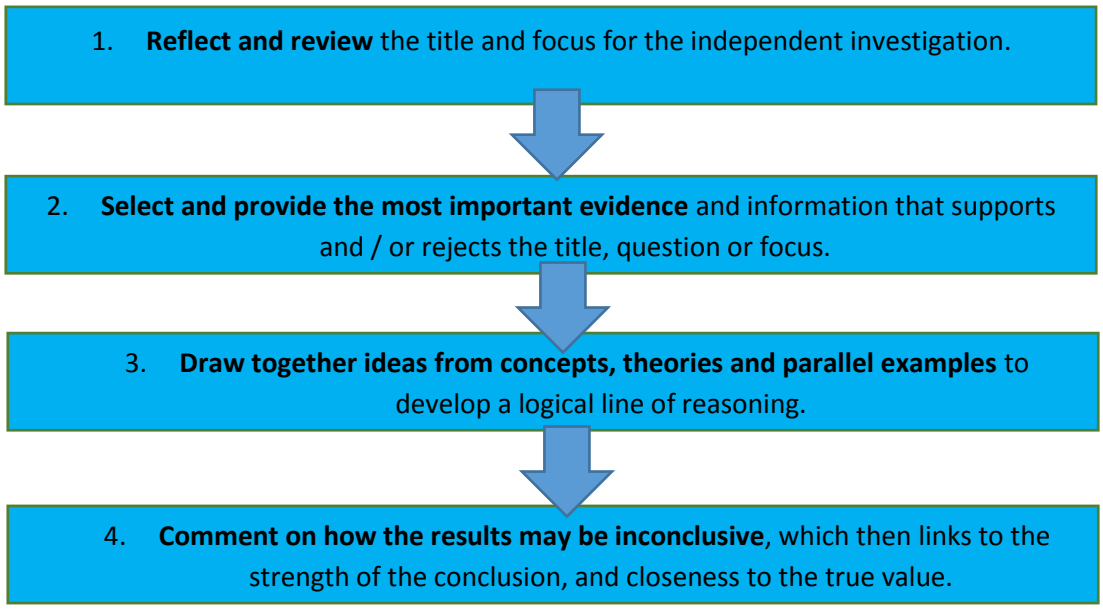


Figure 54: A series of stages to create a meaningful conclusion

Students should also be prepared to accept that their results might be 'messy', in other words the outcomes are not as they might have expected or wanted. They also may not fit the model as predicted or anticipated in the first instance (Figure 55). In many ways, the 'messy' geography gives the student much more to say, yet many might struggle to make a conceptual leap between theoretical understanding and the evidence of the messy fieldwork.

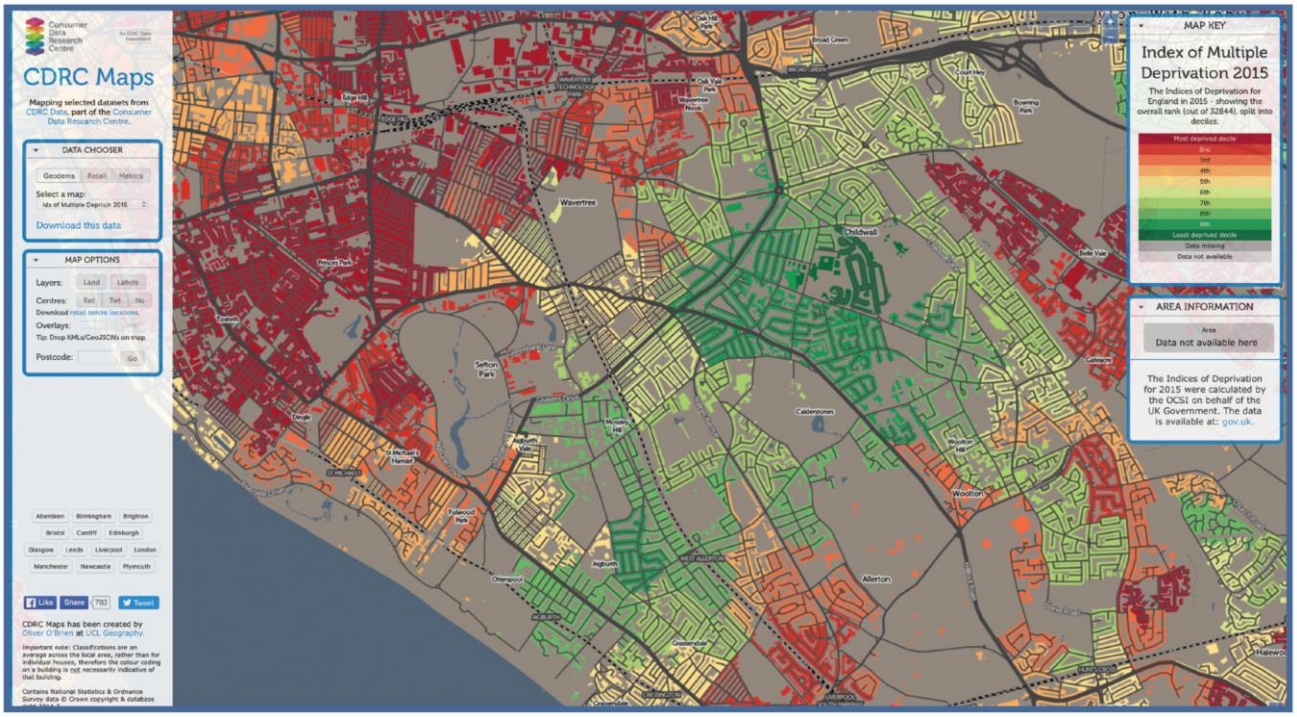


Figure 55: The model of deprivation presented may be much more complex when measured through fieldwork. Students can then challenge the model assumptions
Source: Consumer Data Research Council

vi. Critical evaluation – consideration of reliability, accuracy, validity and precision

Terms such as 'a lot', 'pretty good', 'close' or 'very short' do not have a place in high-quality geographical evaluations, since they lack real meaning. These examples are relative terms – words whose meaning can change depending on what they are compared to. Equally non-technical 'excuses' (particularly around fieldwork and experimental error) must be discouraged since they do not explain how or why an action affected the quality of the outcome, or the impact of this on the true value. So for example saying 'My shopping questionnaire results were rubbish because I only went on Wednesday afternoon' is very weak. In comparison: 'Compared to the 2011 census of the population structure of Stourbridge, my systematic sampling strategy over-represented pensioners and under-represented people of working ages 18–65' would be a much stronger evaluative comment. In some legacy criterion-based coursework mark schemes, significance and complexity of good evaluation was undervalued in terms of marks.

Primary fieldwork data should always be critically evaluated and considered in terms of its reliability, accuracy and validity. All too often, analysis of data and write-ups can make sweeping claims such as 'I did 10 questionnaires, therefore my results were accurate', or 'If I had had more time my results would have been better…', and 'computers may have helped us improve our reliability'. Taken on their own, such statements are somewhat empty, inappropriate and not best practice at GCE. Instead students should look to comment on how sample size, frequency, or timing of observations, for instance, may influence outcomes. So a reworked statement might be: 'The design of fieldwork limited timing of questionnaires to working hours on weekdays in community X. This would have had an influence on the types of people who took part as respondents and this sampling / design error could have lowered results accuracy'. Remember, validity is the suitability of a method to answer the question it was intended to answer.

An accessible overview of evaluative ideas can be found here: https://www.geography-fieldwork.org/a-level/before-starting/evaluation/

Experimental (i.e. fieldwork design and methodology) error can be examined by consideration of accuracy and precision (Figures 56a and 56b) as well as reliability. A number of these ideas are also discussed in the *Pearson Edexcel Maths for Geographers Guide* Section 11.

- **Accuracy** measures how close a measured value is to the true value or accepted value. Since a true or accepted value for a physical quantity may be unknown, it is sometimes not possible to determine the accuracy of a measurement.
- **Precision** measures how closely two or more measurements agree with other. A measurement which is highly reproducible tends to give values which are very close to each other. Precise measurements are not always accurate.

- **Figure 56a: Definitions of accuracy and precision**

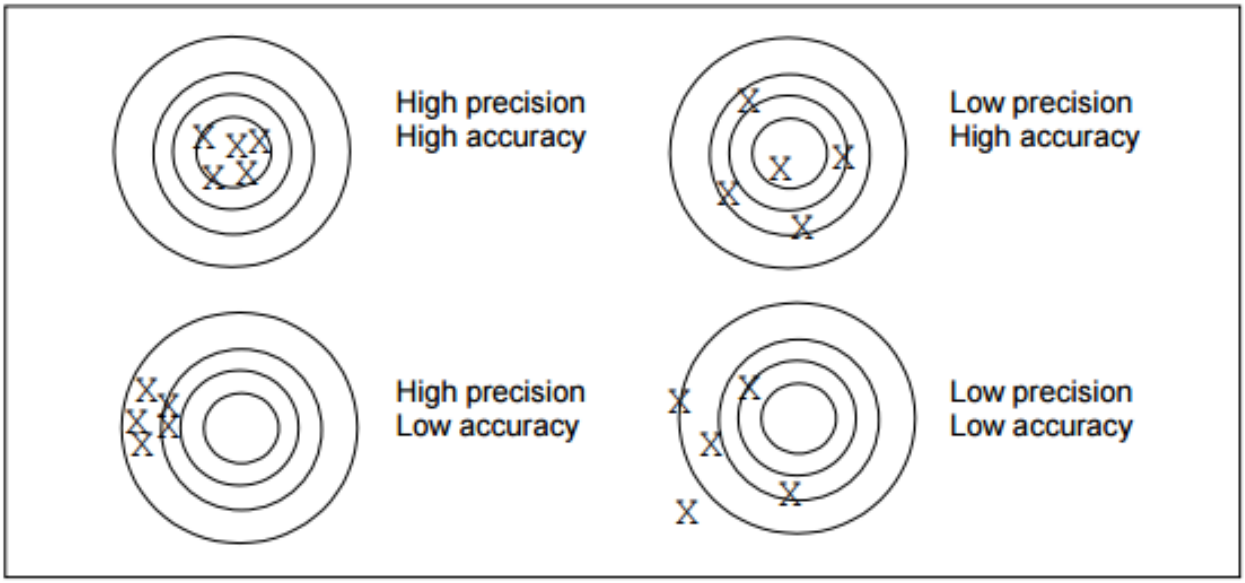


Figure 56b: A common diagrammatic or visual representation of the differences between accuracy and precision
Source: Carlson, G.A (2002)
http://www.ece.rochester.edu/courses/ECE111/error_uncertainty.pdf

Measurement, operator and sampling errors can lead to two possible sources of data not representing true value.

1. **Random errors** cause results to be spread about the true value. For example, a student takes 20 temperature readings and misreads the thermometer for 2 of the readings.

   The effect of random errors *can* be reduced by taking more measurements.

2. **Systematic errors** cause results to differ from the true value by a consistent amount each time the measurement is made. For example, a student uses weighing scales which have not been zeroed, so all the results are 10g too high.

   The effect of systematic errors *cannot* be reduced by taking more measurements.

It might be useful to share an example of errors that were introduced during the last 2011 national census. In England and Wales, undercount for the 2011 census was estimated to be on average a surprising 6%; Figure 57 has the details. However, students must be aware of the

fact that the census is still highly reliable data, gathered thoroughly and at great expense. There is no alternative. In comparison to primary fieldwork data collected by students themselves, typically collected by one person over a small time window, the census is much more reliable. This is the essential learning point – otherwise some students might simply conclude that official stats are 100% untrustworthy.

- *The census results provide a snapshot of the usually resident population as at Census Day (27 March 2011). Usually resident population is defined as those people who are in the UK and who have stayed or intend to stay in the UK for a period of 12 months or more.*
- *Whilst every attempt is taken to count all people in the country on Census Day, there will inevitably be some people who are missed and some people (for example, children) might be counted twice if they form part of two separate households.*
- *There is an additional problem with administration – men are not good form-fillers! Research shows that between the ages of 20 and 30 years, men are less likely to fill in forms. These groups are less likely to be registered with a doctor, they are also more likely to not be in the UK. Their details are classed as missing. Men are more likely to spend time working abroad or travelling, meaning their details are excluded from the census.*
- *Some form-fillers still have concerns about privacy, resulting in some people being often less than truthful when filling the forms, even though you are required to be by law.*

Figure 57. The ways in which sources of errors can be built into national census data

An additional part of the evaluation process should be also be to consider the ethical dimensions of field research.

(7) Combined trips: preparing both AS and A level students

In the delivery of a combined trip of AS and A level students going to the same places and at the same time, consideration needs to be given in terms of longer-term and short-term planning. The following pages provide advice for teachers who are planning such trips.

a. Before the field trip – longer- and shorter-term considerations

In all longer-term planning and course delivery, students need to be made aware of both the similar and different outcomes required for AS and A level.

Similarities: enquiry process, route to enquiry and enquiry framework. Fieldwork skills including design, methodology etc.

Differences: time for fieldwork – minimum of 2 vs 4 days, exam vs coursework assessment, A level – ethical dimensions and literature research.

Refer to Figure 58.

AS fieldwork skills requirements:	
Fieldwork skill number	**Fieldwork skill description** Students are required to:
1	identify appropriate field research questions, based on their knowledge and understanding of relevant aspects of physical and human geography
2	undertake informed and critical questioning of data sources, analytical methodologies, data reporting and presentation, including the ability to identify sources of error in data and to identify the misuse of data
3	understand how to observe and record phenomena in the field and be able to devise and justify practical approaches taken in the field, (including frequency/timing of observation, sampling, and data collection approaches)
4	demonstrate knowledge and understanding of how to select practical field methodologies (primary) appropriate to their investigation
5	demonstrate knowledge and understanding of implementing chosen methodologies to collect data/information of good quality that is relevant to the topic of investigation
6	demonstrate knowledge and understanding of the techniques appropriate for analysing field data and information and for representing results, including GIS, and show ability to select suitable quantitative or qualitative approaches and to apply them
7	apply existing knowledge and concepts to identify, order and understand field observations
8	show the ability to present and write a coherent analysis of fieldwork findings and results in order to justify conclusions as well as to interpret meaning from the investigation, including the significance of any measurement or other errors.

A Level fieldwork skills requirements	
Fieldwork skill number	**Fieldwork skill description** Students are required to:
1	research relevant literature sources and understand and write up the theoretical or comparative context for a research question
2	define the research questions which underpin field investigations
3	demonstrate practical knowledge and understanding of field methodologies appropriate to the investigation of core human and physical processes
4	observe and record phenomena in the field and devise, implement and justify practical approaches taken in the field, including frequency/timing of observation, sampling, and data collection approaches so that good quality data/ information can be collected
5	demonstrate knowledge and understanding of the techniques appropriate for analysing field data and information and for representing results, including GIS, and show ability to select suitable quantitative or qualitative approaches and to apply them
6	demonstrate the ability to interrogate and critically examine field data in order to comment on its accuracy and/or the extent to which it is representative, and use the experience to extend geographical understanding
7	show the ability to write up field results clearly and logically, using a range of presentation methods and apply existing knowledge, theory and concepts in order to understand field observations and make a well argued case
8	evaluate and reflect on fieldwork investigations, explain how the results relate to the wider context and show an understanding of the ethical dimensions of field research.

Figure 58: There are only minor differences in the fieldwork skills between AS and A level

The fieldwork questions in the AS simulate the route to enquiry, so students should see this as a progression pathway into the full enquiry sequence needed at A level.

b. Field trip – Teacher acts as both coach and facilitator.

The field trip itself needs to be differentiated to meet the needs of both AS and A level students. Figure 59 presents two examples of field trips where there are a mixture of students. It is assumed that these trips might take place in either the first year of the AS or the A level. Both

examples fulfil the minimum requirements for AS, but additional fieldwork would be required for A level.

Residential	4 hrs	Full day	4 hrs
AS	**Local centre grounds discovery*** – an introduction to the range of physical fieldwork techniques, enquiry and hands-on with equipment and recording. A chance to experiment and understand issues of design, methodology etc.	**Glacial landscapes and change** – a collaboratively planned fieldwork and executed exercise as per page 8 of specification.	**Assessment focus session** – group work to create exam-ready write-ups + use GIS. Carried out at centre.
A level		**Glacial landscapes discovery** – exploring approaches, e.g. till fabric and sediment orientation, slopes, landscape processes, photos etc.	**Local urban / rural discovery*** – students devise own approaches and methods, group or individual
Follow-up	**AS** – enquiry process and design **A level** – generating questions and ethical dimensions	**AS** – data presentation, analysis and evaluation of day **A level** – focus on literature research and design evaluation	**N/A Return to school**
Organisation elements	*AS and A level groups work together for activity*	*AS and A level groups split, but in the same location. Differentiated follow-up*	*AS and A level groups split in different places*

Local 'days out'	3 hrs	6 hrs	6 hrs
AS	**Local school grounds discovery*** – an introduction to the range of physical fieldwork techniques, enquiry and hands-on with equipment and recording. A chance to experiment and understand issues of design, methodology etc.	**Coastal landscapes and change** – a collaboratively planned fieldwork and executed exercise as per page 8 of specification.	**Regenerating places** – a collaboratively planned fieldwork and executed exercise as per page 8 of specification.
A level		**Coastal landscapes discovery*** – exploring approaches, e.g. sediment, coastal defences, cliffs, habitats etc.	**Regenerating places discovery*** – students devise own approaches and methods, group or individual
Organisation elements	*AS and A level groups work together for activity*	*AS and A level groups split, but in the same location*	*AS and A level groups split, but in the same location*

Figure 59: Examples of a mixed field trip with combinations of 3 days for AS and A level outcomes. Residential and days out are given as examples, but other models could be used

*Note (1): * for discovery fieldwork, see Appendix 2.*
Note (2): The need for additional and separate staff cover will depend on the choice of site and location as well as group size.
Note (3): Follow-up from the days out can mirror residential, but will need to be programmed into a school SoW.

The role of the teacher, at both AS and A level, is to support students and give them the opportunity to develop the skills that lead towards independence. Figure 58 has considered the

difference between the framed (AS) and independent enquiry (A level) and these variances must be considered as part of the fieldwork delivery. This may have an implication in terms of planning and staffing requirements.

c. After the field trip – review and reflection

Post-fieldwork provides the opportunity for differentiation and difference in terms of choice of activity.
In particular, teachers may wish to focus on a number of linked ideas and activities. Examples of these are listed below:

i. Discuss the difference in models of assessment between AS and A level. In some instances, students may want to use the AS fieldwork experience to give them ideas of their Independent Investigation focus at a later date.
ii. Discuss similarities between AS exam questions and the Independent Investigation, for example the enquiry pathway and process
iii. See how the fieldwork experience can provide links to taught content, and develop a deeper understanding of AO2 skills: analysis, interpretation and evaluation.

Post field-trip should also be seen as a Department opportunity to review and reflect the fieldwork itself, especially in terms of location, timing, engagement, opportunities for individuality and equipment.

(8) References and further reading

Barcelona Field Studies Website http://geographyfieldwork.com/

Caton (2006), *New Approaches to Fieldwork (Theory into Practice).* Geographical Association.

FSC Fold Out Key – *Understanding Geography Fieldwork 1: Statistics for Geographers*

FSC Fold Out Key – *Geographical Investigations* http://www.field-studies-council.org/publications/pubs/geographical-investigations.aspx

FSC Fold Out Key – *Understanding Geography Fieldwork 2: The Central Business District*

FSC Geography Fieldwork Website https://www.geography-fieldwork.org/

http://www.field-studies-council.org/publications/pubs/understanding-geography-fieldwork-1-statistics-for-geographers.aspx

http://www.field-studies-council.org/publications/pubs/understanding-geography-fieldwork-2-the-central-business-district.aspx

Hay, Iain (ed.) (2016) *Qualitative research methods in human geography*. (OUP)

Lambert, D. and Reiss, M. *The place of fieldwork in geography and science qualifications*. IOE. http://www.field-studies-council.org/media/1252064/lambert-reiss-2014-fieldwork-report.pdf

Phillips, R. and Jennifer Johns (2012) *Fieldwork for human geography* (SAGE).

RGS Fieldwork Strategies http://www.rgs.org/nr/rdonlyres/90709efb-aa7f-4fe6-9a24-a9511dc93662/0/fieldworkstrategies.. Accessed January 2017

Roberts, M. (2013) *Geography Through Enquiry*. Geographical Association.

St John, P. & Richardson, D. (2013) *Methods of Presenting Fieldwork Data*. Geographical Association.

St John, P. & Richardson, D. (2013) *Methods of Statistical Analysis of Field Data*. Geographical Association.

(9) Acknowledgements

We are grateful to the following for permission to reproduce copyright material:

The Figure 'Accuracy and Precision' from *Experimental Errors and Uncertainty* by G.A. Carlson, 2002, http://www.ece.rochester.edu/courses/ECE111/error_uncertainty.pdf, copyright © G.A. Carlson, 2000 - 2002; A table adapted from "The place of fieldwork in geography and science qualifications" by David Lambert & Michael J Reiss, IOE, 2014, p.9, http://www.field-studies-council.org/media/1252064/lambert-reiss-2014-fieldwork-report.pdf, copyright © David Lambert and Michael J Reiss; An extract from *Geographical Investigations* published by the Field Studies Council www.field-studies-council.org © FSC 2016; An extract from *Learning outside the classroom: How far should you go?,* October 2008, Ofsted, Ref 070219, http://webarchive.nationalarchives.gov.uk/20141124154759/http://ofsted.gov.uk/resources/learning-outside-classroom, © Crown Copyright 2008; An extract from 'Paul Hamlyn Foundation Evaluation of Learning Away: Interim Report 1', by Sally Kendall, York Consulting, June 2013, page iv, http://learningaway.org.uk/wp-content/uploads/Learning-Away-Interim-Report-June-2013-FINAL.pdf. Reproduced with permission of York Consulting LLP and Paul Hamlyn Foundation; A screenshot from Microsoft Word/Office 365; Extracts adapted from http://research-methodology.net/research-methodology/research-approach/inductive-approach-2/ and http://research-methodology.net/research-methodology/research-approach/deductive-approach-2/, copyright © Research Methodology. Reproduced with permission from John Dudovskiy; A table from *Geography Through Enquiry: Approaches to teaching and learning in the secondary school* by Margaret Roberts, 2013, Geographical Association, www.geography.org.uk. Reproduced by permission.

Appendix 1: The A level Geography route to enquiry

Stage	Description
Purpose, identification of a suitable question/aim/hypothesis and developing a focus	Identify appropriate field research questions/aims/hypotheses, based on their knowledge and understanding of relevant aspects of physical and/or human geography. Research the relevant literature sources linked to possible fieldwork opportunities presented by the environment, considering their practicality and relationship to compulsory and optional content. Understand the nature of the current literature research relevant to the focus. This should be clearly and appropriately referenced within the written report.
Designing the fieldwork methodologies, research and selection of appropriate equipment	Consideration of how to observe and record phenomena in the field and to design appropriate data-collection strategies taking account of sampling and the frequency and timing of observation. Demonstrate knowledge and understanding of how to select practical field methodologies (primary) appropriate to their investigation (may include a combination of qualitative and quantitative techniques).
Information collation and data representation and analysis	Know how to use an appropriate diagrams, graphs and maps, and using geospatial technologies to select and present relevant aspects of the investigation outcomes.
Analysis and explanation of information	Use techniques appropriate for analysing field data and research information. Demonstrate the ability to write a coherent analysis of fieldwork findings and results linked to a specific geographical focus.
Conclusions and critical reflection on methods and results	Use knowledge and understanding to interrogate and interpret meaning from their investigation (theory, concepts, comparisons), through the significance of conclusions. Demonstrate the ability to interrogate and critically examine field data (including any measurement errors) in order to comment on its accuracy and/or the extent to which it is representative and reliable.
Recognising the wider geographical context	Explain how the results relate to the wider geographical context and use the experience to extend geographical understanding. Show an understanding of the ethical dimensions of field research.

Learning hours for the independent investigation are not specified because the process of producing the report is iterative and undertaken independently.

The independent investigation report may be completed at school/college, or at home (or other location outside school/college), or at a combination of both.

Appendix 2: Discovery Worksheets

1. Urban environments (Inner-city/CBD)
2. Urban environments (Suburbs)
3. Rural environments
4. Physical systems and sustainability
5. Coastal environments
6. Glacial environments
7. Local studies
8. Large scale (regional/national/international)

Discovery Worksheet no.1 – Urban environments (Inner-city / CBD)

Links to specification content		
Topic 3: Globalisation	Topic 4A: Regenerating Places	Topic 4B: Diverse Places
What are the causes? Why has globalisation accelerated recently? What are the impacts? How should people respond to its challenges?	How and why do places vary? Why might regeneration be needed? How is it managed? How successful is regeneration?	How do population structures vary? How do different people view diverse living spaces? Why are there demographic/cultural tensions? How successfully can they be managed?

Globalisation

Interdependence

Identity

Globalisation evidence and external connections

Destination desirability and representation

Endogenous and exogenous place relationships

The space as a system

Emotional representation of space

Social media and gentrification

Flows, flues and networks

Place and architectural imageability

Routeway analysis

Perception of place

Catchment analysis

Historical identity and change

Shopping quality and experience

Facility usage and affordability

Neighbourhood reputation

Variations in the cultural landscape

Accessibility for user groups

High street diversity and future resilience

Patterns of inequality

Unconventional and illicit spaces

Dynamic change over a 24hr period

Resilience

Inequality

Systems

Discovery Worksheet No.2 – Urban environments (Suburbs)

Links to specification content		
Topic 3: Globalisation	Topic 4A: Regenerating Places	Topic 4B: Diverse Places
What are the causes? Why has globalisation accelerated recently? What are the impacts? How should people respond to its challenges?	How and why do places vary? Why might regeneration be needed? How is it managed? How successful is regeneration?	How do population structures vary? How do different people view diverse living spaces? Why are there demographic/cultural tensions? How successfully can they be managed?

Sustainability

Interdependence

Causality

Gentrification and filtering

Suburban flood risk

Community cohesion and change

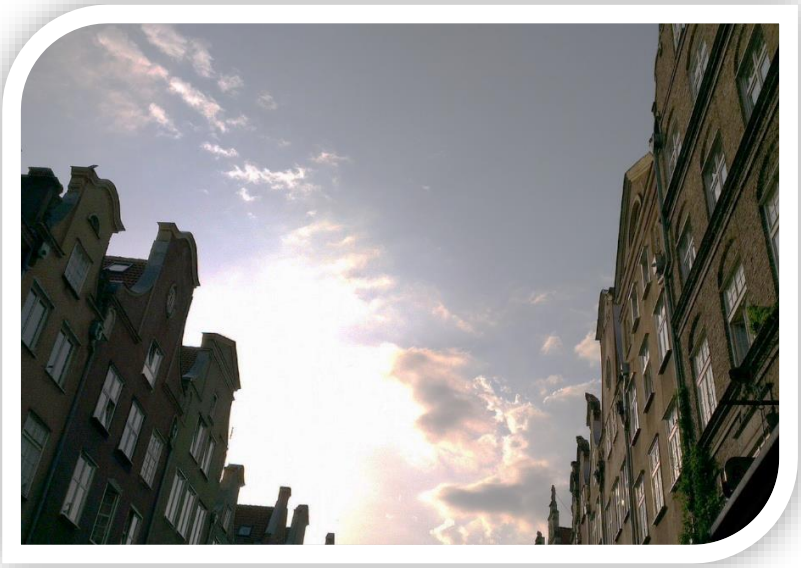
Diurnal variations in the suburbs

Community attachment to place

Transport and air quality

Geology and built environment

Variations in sustainability



Urban drainage and risk

Patterns of crime and vandalism

Community resilience

Historical identity and change

Residential quality and experience

Soundscapes and acoustic variations

Housing desirability and representation

Human network analysis

Affordability for different groups

Emotional representation of space

Local water pollution

Patterns of place usage

Community sustainability and future resilience

Identity

Inequality

Risk & Resilience

Discovery Worksheet No.3 – Rural environments

Links to specification content		
Topic 3: Globalisation	Topic 4A: Regenerating Places	Topic 4B: Diverse Places
What are the causes? Why has globalisation accelerated recently? What are the impacts? How should people respond to its challenges?	How and why do places vary? Why might regeneration be needed? How is it managed? How successful is regeneration?	How do population structures vary? How do different people view diverse living spaces? Why are there demographic/cultural tensions? How successfully can they be managed?

Sustainability

Sustainability attitudes

Variations in landscape quality and capability

Local water pollution

Variations in biodiversity

Rural spaces and flood risk

Rural service challenges

Systems

Rural microclimates

Transport and local air quality

Community diversity

Globalisation

Patterns of place usage

Relationships and connections

Hidden inequality

Attitudes: Urban vs rural

Constrained rural residents

Gentrification and filtering

Community cohesion and change

Housing desirability and representation

Patterns of diversification

Risk & Resilience

Community sustainability and future resilience

Inequality

Affordability for different groups

Emotional representation of space

Identity

Cultural and artistic representation

Discovery Worksheet No.4 – Physical systems and sustainability

Links to specification content		
Topic 2: Landscape Systems	Topic 5: Water Cycle	Topic 6: Carbon Cycle
What processes influence coastal & glacial landscapes & create distinctive landforms? How does coastal erosion / sea level change affect coasts? How are coastal / glacial landscapes managed?	What processes operate in the hydrological cycle and what factors affect it at different scales? How does water insecurity occur and why is it becoming such a big 21st century issue?	How does the carbon cycle maintain planetary health? What are the impacts of our increasing demand for energy? How are the carbon & water cycles linked to the global climate system?

Feedback

Channel roughness and bed characteristics

Diurnal and seasonal fluxes

Local coping capacity and inequality

Local river characteristics and risk

Variations in landscape risk and resilience

Physical factors and river systems

Climate change and communities

Systems

Land use and land management

Systems: stores and fluxes

Local water pollution

Sustainable catchment management

Threshold

Variations in soil characteristics

Catchment carbon fluxes

Threshold events evidence

Biomass carbon

Soil carbon

Hydrological system and controls

Patterns of infiltration

Antecedent conditions

Catchment flood risk

Attitudes to risk

Resilience

Community flood resilience

Sustainability

Risk

Discovery Worksheet No.5 – Coastal environments

Links to specification content		
Topic 3: Coastal Landscapes	Topic 4A: Regenerating Places	Topic 4B: Diverse Places
What factors lead to differences in coastlines? How are distinct coastal landforms created? How does coastal erosion and sea level change affect coasts? How can coastlines be managed?	How and why do places vary? Why might regeneration be needed? How is it managed? How successful is regeneration?	How do population structures vary? How do different people view diverse living spaces? Why are there demographic/cultural tensions? How successfully can they be managed?

System

- The coast as a system
- Place and architectural imageability
- Perception of place
- Historical identity and change
- Soundscapes and acoustic variations

Threshold

- Zonation and succession
- Emotional representation of space
- Evidence for threshold events
- Geology and landscape evolution

Causality

- Destination desirability and representation
- Physical network analysis
- Slopes and cliffs
- Patterns of micro-features
- Beach quality and experience
- Coastal conflicts

- Defence resilience
- Accessibility for user groups
- Coastal resort sustainability and future resilience
- Patterns of sediment difference
- Patterns of place usage
- Seasonal dynamic change

Resilience

Mitigation and adaptation

Discovery Worksheet No.6 – Glacial environments

Links to specification content		
Topic 2: Glacial landscapes	Topic 5: Water Cycle	Topic 6: Carbon Cycle
How has climate change influenced glacial landscape formation? How do glacial processes create glacial landforms? How are glacial landscapes managed?	What processes operate in the hydrological cycle and what factors affect it at different scales? How does water insecurity occur and why is it becoming such a big 21st century issue?	How does the carbon cycle maintain planetary health? What are the consequences of our increasing demand for energy? How are the carbon & water cycles linked to the global climate system?

Systems

Channel roughness and bed characteristics

Local till analysis

Soil characteristics and carbon

Upland environment carbon fluxes

Catchment flood risk

Upland slope stability

Contrasting landscape risk and resilience

Periglacial landscape risk

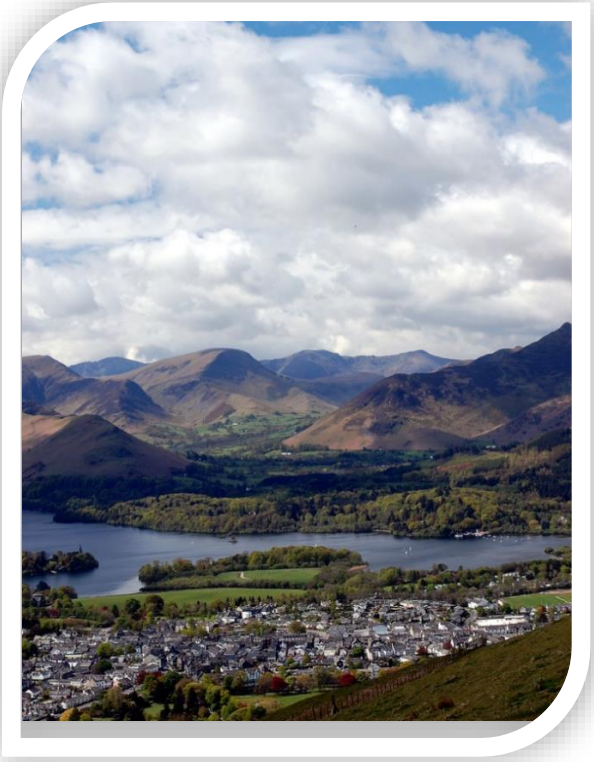
Sustainability

Upland biomass carbon

Land use and land management

Sustainable catchment management

Patterns of infiltration



Community landscape protection

Relic landscape reconstruction

Threshold

Periglacial landscape environments

Threshold events evidence

Local water pollution

Climate change, communities and threats

Cultural significance of upland landscapes

Geology and evidence for micro-glacial features

Energy landscapes

Rural community challenges

Risk & Resilience

Feedback

Identity

Discovery Worksheet No.7 – Local studies

Links to specification content		
Topic 2: Landscape Systems	Topic 3: Globalisation	Topic 4: Shaping Places
What processes influence coastal & glacial landscapes & create distinctive landforms? How does coastal erosion / sea level change affect coasts? How are coastal / glacial landscapes managed?	What are the causes? Why has globalisation accelerated recently? What are the impacts? How should people respond to its challenges?	How and why do places / popl. structures vary? Why might regeneration be needed? How are places viewed differently & why are there tensions? How can places be successfully managed?

Sustainability

Causality

Interdependence

Sustainable drainage (SUDS)

Local water pollution

Relic landscape reconstruction

Retailing sustainability and success

Land use and land management

Changes along a street

Local landscape risk

Demographic and cultural tensions

Storm hydrographs and systems

Similarities and cloned places

Green space and local carbon stores

Changing migration flows

Rural community challenges

Spatial patterns of inequality

Centripetal and centrifugal forces

Globalisation and glocalisation influences

Local energy attitudes

Family network analysis

Local attitudes to consumption

Drivers of social inequality

Place profiles in the local area

Cultural significance of local place

Inequality

Globalisation

Identity

Discovery Worksheet No.8 – Large scale (regional/national/international)

Links to specification content		
Topic 6: Carbon Cycle & Energy	Topic 7: Superpowers	Topic 8: Development & Connections
How does the carbon cycle maintain planetary health? What are the consequences of our increasing demand for energy? How are the carbon & water cycles linked to the global climate system?	What are superpowers and how have they changed over time? What are their impacts on global systems? What spheres of influence are contested and what are the implications of this?	Why do levels of development vary? How are human rights used to justify geopolitical interventions and what are the outcomes? How does globalisation affect migration and 'nation states'? How do global organisations manage global issues and conflicts?

Interdependence

Globalisation

Threshold

Evidence for connected and un-connected regions

Land use and regional catchment management

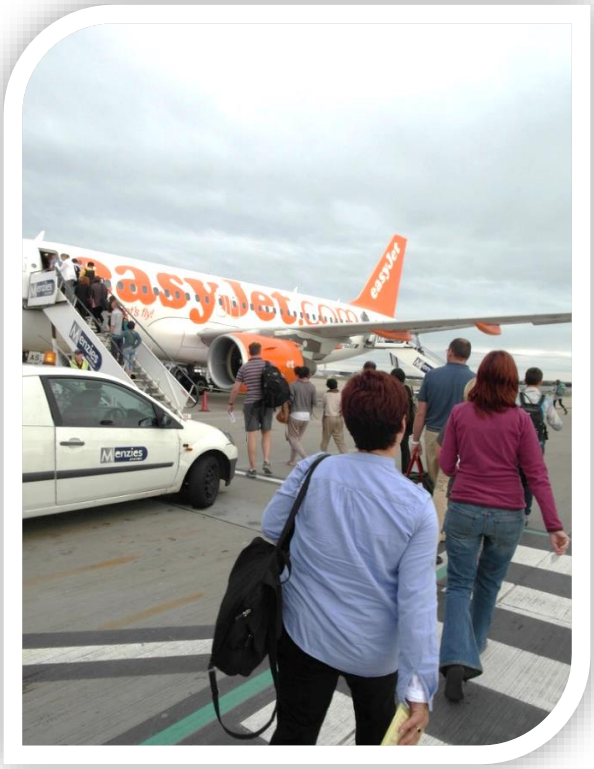
Regions of green power

Tourism impact and regional economy

Globalisation: winners and losers

The lottery of healthcare

International diversity and the high-street



Changes in seasonal tourism

International ownership and housing affordability

A history of international migration

"Two-speed" economies

Rural-urban migration

Patterns of international migration

Voter preferences to national issues

Low cost travel and international tourists

Dialect differences

Environmental management: global to local

Changing regional energy mix

Comparative regional carbon footprints

Attitudes to consumer society

Risk & Resilience

Sustainability

Identity