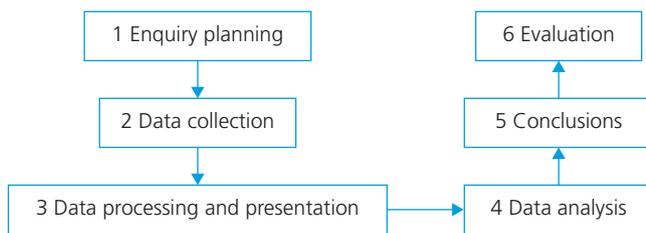


# Fieldwork enquiry for Eduqas GCSE Geography A

Geographical enquiries enable you to ‘create’ rather than to be ‘given’ knowledge. They will help you to explain why a pattern, process or landform is present by asking questions, then using geographical skills to find answers to these questions. The fieldwork enquiry is a geographical enquiry which is based on observations made in the field where primary data is collected and, together with secondary data, is analysed. The six stages of an enquiry are:



**Figure 1** Stages in a fieldwork enquiry.

Each year, WJEC will instruct centres as to which fieldwork methodological approach to use for your enquiry. This is the way in which you will try to find the answer to your investigation, including the methods which you use to collect the data. You will carry out fieldwork using one approach and one concept from the table below:

### Revision activity

Highlight in the table which methodological approach and which concept you have used.

Methodological approach	Concept
<b>Use of transects</b> , for example, changes across a sand dune system, across a city or along a river channel	<b>Place: understanding the identity of places</b> For example, comparing two villages, the characteristics of two forest ecosystems
<b>Change over time</b> , for example, changes in land use, footfall, species	<b>Sphere of influence – measuring the extent of catchment areas and their effects over a place</b> For example, CBD redevelopment, a major sporting event
<b>Qualitative surveys</b> , for example, in urban areas, perceptions of a retail environment	<b>Cycle and flows – identifying patterns of movement, reasons for and effects of these movements</b> For example, commuter flows, movement of people, seasonal change in ecosystems
<b>Geographical flows</b> , for example bedload, people, traffic	<b>Mitigating risk – identifying the nature of risk and responses to it</b> For example, risk of coastal flooding, location of a new wind farm
	<b>Sustainability – how sustainable a community can be made</b> For example, redevelopment of a brownfield site, new cycle route
	<b>Inequality – analysing patterns of inequality</b> For example, quality of life for different groups of people, access to services in rural communities

## What type of questions will you be asked?

Your component 3 exam will be split into three sections:

- Part A – in this section you will be asked questions that will test fieldwork methodology, how to represent the data gathered and how to analyse the data so that patterns and trends can be clearly seen.
- Part B – in this section you will be tested on how using fieldwork can be used to investigate concepts in geography.
- Part C – in this section you will need to apply concepts that you have learnt to new examples and data that the examiner provides.

Therefore, in this exam paper you will be asked questions on your own fieldwork experience **and** on examples and data provided by the examiner.

The rest of this document will explain the geographical enquiry process in more detail, including the types of decisions that would need to be taken at different stages.

## What is the geographical enquiry process?

### What are you going to investigate?

Your fieldwork enquiry starts with the decision about what you are going to investigate. Are you questioning a pattern that can be seen? Examples would be a change in micro-climates across a city or a change in the size and position of a meander over time. Devising your geographical question will create a focus for the rest of the enquiry process.

Once you have decided on the question, the next step is to think about the outcomes. For example, ‘How does the beach profile of Pwll Du Bay change over time?’ may lead you to consider whether longshore drift will have an influence on this beach and so the key question or hypothesis you decide to investigate could be ‘How does longshore drift influence the beach profile on Pwll Du Beach?’

### Testing your hypothesis

Now that you have your key question, the next step is to test your hypothesis. To do this, you will need to break down the key question into a number of sub-questions. This will enable you to focus on a small part of the information required to answer the main question and help you to identify the specific data that can be collected. Some sub-questions for the above hypothesis could be:

- Is there evidence of a change in deposition on Pwll Du beach over time?
- How does the beach profile change from east to west across the beach?
- How does the beach profile change after a larger storm event?

### How is evidence collected?

Collecting data for a fieldwork enquiry is an important stage in the investigative process. If the data is inaccurate or of the wrong type then the conclusions are likely to be incomplete or invalid. Control groups are often established to ensure that it is only the factors being investigated that vary. The sub-questions that you have already identified should be used as guidance as to what data to look for.

## Where will you collect your data?

The collection of data for fieldwork enquiries is often guided by the locations at which data can be collected. For example, carrying out a survey of a beach profile would be restricted to tide times, whereas a river survey will be restricted by not only the right of access to the river (does the section you wish to survey run across private property?) but also the points at which the river is safe to enter. When planning the collection of evidence, the 'ideal' locations at which you might wish to collect data may not always be accessible.

## Sampling techniques

The size of the sample taken will often depend on the time allowed for data collection and the statistical techniques that will be applied to the data later. Too small a sample size and the data may not be valid but too much and the data may become too difficult to analyse. The method of sampling you use to collect data is also very important as the data you collect needs to be a true representation of the area of study. There are three main types of sampling:

- **Random sampling:** this type of sampling involves choosing sample sites at random and therefore every sample point has an equal probability of being sampled. For example, if choosing people shopping in a CBD to answer a questionnaire, then people would be chosen purely on the basis of whoever was willing to stop and answer your questions rather than picking every fifth person. The advantage of using this type of sampling is that it removes bias from the selection process, but a disadvantage may be that the sample points are clustered in one part of the study area.
- **Systematic sampling:** this type of sampling involves choosing sample sites at regular intervals in time or space, and should be evenly distributed across the study area. For example, if surveying a 2 km river, measurements could be taken every 100 m regardless of terrain. The advantage of this type of sampling is that it covers a range of locations in the whole of the study area and is quick and easy to do. However, a disadvantage may be that variations can be missed if the sample sites are too far apart.
- **Stratified sampling:** this type of sampling involves splitting the study area into sub-sections and then sampling each of those sub-sections. For example, if studying the quality of housing in an inner-city area then it is important to study streets where gentrification has taken place as well as those areas where it has not. By using stratified sampling we can ensure that all types of housing are included in the survey. A disadvantage of this type of sampling is that information on the area of study is needed before the survey is carried out.
- **Opportunistic sampling:** this type of sampling involves picking sample sites or people due to their ease and convenience. For example, if carrying out a river survey, sites may be picked due to them being near a road or ease of access rather than them being truly representative of the river's course. An advantage of this type of sampling is that it is usually more convenient and less time consuming but the disadvantage is that it may not be truly representative of the area or population that you are studying.

**Random sampling** All parts of the study area/population have an equal chance of being selected

**Systematic sampling** Parts of the study area/population are selected at equal intervals

**Stratified sampling** Where the study area/population is split into groups and then a random sample is taken within each group

**Opportunistic sampling** Picking sample sites or people due to their ease and convenience

## Primary and secondary data

- Primary data is gathered from information that you have measured or observed yourself. Using fieldwork equipment will help to ensure that the data obtained is accurate and reliable. It provides evidence of the patterns or processes that are happening at the study location at the time the data was collected. This data is recorded on a data-collection sheet which is designed in the planning stage of the enquiry and aims to organise the data for ease of analysis later in the process.
- Secondary data is collected by someone else, and may include information available from the internet such as satellite images, aerial and oblique photos, large databases and geographic information systems (GIS), using Ordnance Survey maps or the results from a similar study that someone else has done previously.

Both types of data are a valuable resource to call on when analysing results and therefore should be included in all fieldwork enquiries where possible.

## Quantitative and qualitative data

When considering what primary data to collect, you will need to consider the type of data you are looking for:

- **Quantitative data** is data that can be measured or recorded as numbers. This may include flow data (for example river discharge), scale (pebble size), spatial patterns (levels of deprivation across a city) or temporal change (rainfall patterns over a ten-year period). For example, measuring the width of a river or the number of cars passing a point within a certain time period. This type of data is more easily analysed for trends and patterns.
- **Qualitative data** is data that cannot be measured in numbers. Such data may include observations of people and places through questionnaires, annotated photographs and sketches, videos, interviews, **bipolar techniques** and so on. The advantage of collecting this type of data in a fieldwork enquiry is that it provides a more in-depth source of information which may be able to explain the 'reasons' behind the trends that quantitative data show.

**Quantitative data** Data that can be measured or recorded as numbers

**Qualitative data** Observed data that cannot be measured in numbers

**Bipolar techniques** Data that is collected by the observer scoring the variable on a scale from one extreme to the other

## How can evidence be processed and presented?

### Processing data

Once you have collected your data, you will need to process it in order to analyse it and draw conclusions to your enquiry. Processing data makes it manageable to work with, and allows you to see trends and patterns and to find out if your observations are statistically significant. There are many different methods of processing data, from simple techniques such as percentages and averages to more complex techniques such as quartile and interquartile ranges. You need to know which type is appropriate for the data.

Processing technique	Example of use
<b>Measures of central tendency, spread and cumulative frequency:</b>	
● <b>median</b>	The median salary earned within a city
● mean	The mean river depth at a location
● <b>range</b>	The number of degrees difference between the highest and lowest temperatures recorded for a location
● quartiles and interquartile range	The range of pebble sizes found on a storm beach
● mode	The number of visits to a shopping centre a person makes per month
● modal class	The income ranges of people living in a rural community
<b>Percentage and percentiles:</b>	
● percentage change	Has the percentage of unemployed people increased or decreased in an area?
● <b>percentiles</b>	The number of livestock per hectare compared to other areas

**Median** The value lying at the mid-point of a frequency distribution

**Range** The difference between the highest and lowest values

**Percentile** A number where a certain percentage of numbers fall below that percentage

**Topological map**  
A simplified map which lacks scale and direction and contains only the vital information, for example the London Underground Map

## Presenting data

After processing data, you will need to present it using an appropriate graphical or cartographic technique. The type of technique chosen is important as it can influence the ease with which trends or patterns can be identified. For example, if representing flow data then a line graph may be more appropriate than a histogram.

Presentation technique	Example of use
<b>Cartographic techniques:</b>	
● cross-sections	Cross-section of a river
● transects	The profile of a beach
● <b>topological maps</b>	Map of the London Underground
● isoline maps	The number of pedestrians in a CBD
● maps with proportional symbols	The number of taxis in a city over time
● choropleth maps	The number of disadvantaged people living in parts of a city
● flow line maps	The discharge of a river
<b>Graphical techniques:</b>	
● bar graphs	The number of each species in a forest
● line graphs	Monthly temperature readings
● pie charts	The methods of travel visitors used
● proportional circles	The number of people at a location
● pictograms	The number of people in a shopping centre over time

Presentation technique	Example of use
● histograms with equal class intervals	The number of each size of pebble found in a river
● star and radial graphs	Quality of the environment data
● <b>kite diagrams</b>	Percentage cover of a species along a transect
● <b>triangular graphs</b>	Employment structure (primary, secondary and tertiary)
● dispersion graphs	House prices in two different areas
● scatter graphs	The relationship between stream width and depth
● population pyramids	The population structure of a country by age and gender

**Kite diagram** A visual picture of the population density of a species

**Triangular graph** A graph with three axes used to show the relationship between three variables

**Trend** An underlying pattern shown by data

**Variable** An element that may change

**Anomaly** A piece of data that does not fit the overall trend in the rest of the data

## How can evidence be analysed? How do patterns and trends relate to wider geographical knowledge and understanding?

### Analysing data

Before drawing conclusions from your fieldwork enquiry, the next stage is to analyse the data to look for relationships, connections or patterns that may have emerged or relationships between two variables that have been measured.

### Observing the data

The types of observations that can be made from data are:

- **Trend** – is the data increasing, decreasing or remaining the same?
- Where were the maximum and minimum values found?
- Do any **variables** have a statistically significant relationship?
- Are there any **anomalies** in the data? Why have they occurred here?
- Is the pattern temporal (varies over time) or spatial (varies over space)?

When analysing data it is good practice to use examples from the data of any trends that you have observed. For example, if you are investigating the changing width of a river channel from source to mouth, rather than stating that it increases, use the data to show how: ‘The width of the river increases from 2 m at the source to 15 m at the mouth of the river.’

### Relating observations to geographical concepts and processes

Once the trends or patterns have been identified, you need to relate your observations to geographical concepts and processes. This will put your study into context. For example, by fitting a typical river profile or of being an anomaly where a certain factor in that river basin causes a change in the river which does not fit the usual pattern. Whether or not your data fits with geographical theory is an equally important part of the analytical process.

## What conclusions may be drawn from fieldwork enquiries?

The conclusions to a fieldwork enquiry should complete the original aim of the investigation – answering the key question or hypothesis. It provides the opportunity to pull together all of the evidence that you have collected (both primary and secondary) for your enquiry. However, you should not try to include every piece of information that you have collected; the key is that the information is relevant.

A good approach would be to focus your conclusions on your key question/hypothesis and its sub-questions. These were identified at the start of your enquiry and should form the basis of your conclusions. Answer the sub-questions first and use evidence from your data to reinforce the conclusions you are making. Relate each sub-question to geographical theory and do not worry if your conclusions are different from the theory – every study is unique in its location and time and therefore your observations are correct. In fact, if they differ from geographical theory it gives you a great opportunity to explain why they may be different! Once you have answered the sub-questions, then use this evidence to answer the key question or hypothesis. In this way it will be clear to see how your conclusions are evidence based.

## What evaluative techniques should be applied to the enquiry?

The final stage of your fieldwork enquiry involves evaluating the accuracy, reliability and validity of your conclusions. You will also need to assess the strengths and limitations of each stage of the enquiry process:

### Exam tip

Ensure that you know the difference between accuracy, reliability and bias of data.

Geographical enquiry: stages 1–5	Questions to ask
<b>1 Enquiry planning</b>	<ul style="list-style-type: none"> <li>● Did the investigation go ahead as planned?</li> <li>● Did the sub-questions provide evidence to investigate the hypothesis?</li> <li>● Did the recording sheets work effectively?</li> <li>● Did the planned statistical techniques help to see patterns or trends in the data?</li> <li>● Did the equipment work correctly?</li> </ul>
<b>2 Data collection</b>	<ul style="list-style-type: none"> <li>● Was there a range of primary data collected?</li> <li>● Did you collect both quantitative and qualitative data?</li> <li>● Were the measurements taken accurately and consistently?</li> <li>● Was the correct sampling technique used?</li> </ul>
<b>3 Data processing and presentation</b>	<ul style="list-style-type: none"> <li>● Did you use the correct data processing techniques? How do you know?</li> <li>● How did these techniques help you to better understand your data?</li> <li>● Did you use the correct methods of presentation?</li> <li>● How did these methods help you to identify trends and patterns?</li> </ul>
<b>4 Data analysis</b>	<ul style="list-style-type: none"> <li>● Did you observe trends and patterns in your data? If not, why not? How did your results relate to geographical theory?</li> <li>● If different, what was the cause of this difference?</li> <li>● Is there bias in the data? If so, why?</li> </ul>
<b>5 Conclusion</b>	<ul style="list-style-type: none"> <li>● Are your conclusions a true representation of that place and time?</li> <li>● Have you been able to answer all of the questions (key question/hypothesis and sub-questions) set at the beginning of the enquiry?</li> <li>● How different are they from the expected outcomes?</li> </ul>

**Revision activity**

To help you to remember the key points of the geographical enquiries you have carried out, complete the tables below. List the techniques that you have used for each section and then comment on how effective these techniques were for your enquiry. Tick each section only when you fully understand and have learned it.

**My first fieldwork enquiry**

<b>Hypothesis</b>	
<b>Sub-questions</b>	

	Technique	Comment
<b>Enquiry planning</b>		
<b>Data collection</b>		
<b>Data processing and presentation</b>		
<b>Data analysis</b>		
<b>Conclusions</b>		
<b>Evaluation</b>		

**My second fieldwork enquiry**

<b>Hypothesis</b>	
<b>Sub-questions</b>	

	Technique	Comment
<b>Enquiry planning</b>		
<b>Data collection</b>		
<b>Data processing and presentation</b>		
<b>Data analysis</b>		
<b>Conclusions</b>		
<b>Evaluation</b>		