

## FIELDWORK: THE STAGES OF INVESTIGATION

### Introduction

AS/A level specifications include reference to fieldwork, which means your educational institute (college or school) should undertake some dedicated fieldwork days. This will involve preparation, data collection (the fieldwork) and data follow-up so that you become familiar with what fieldwork entails and the skills to be acquired. Some syllabus specifications will give you the opportunity to complete your own fieldwork report, or there may be an opportunity to sit a fieldwork examination. Both these approaches are considered in this **Geofile**.

### Personal fieldwork investigation

There should be a sound context for the work, which will have been gained from classroom inspiration, your school fieldwork or background reading. The title must be a clear indication of what the fieldwork is about and should give rise to the aim, which then becomes the hypothesis. Broad aims lead to superficiality and are not achievable within the context of a piece of A Level fieldwork. In physical geography it may be necessary to include and develop a human aspect of the work. The key to a sound investigation is a realistic testable hypothesis in a well-chosen location. Demonstrate how the location is suitable for your work. Also, how and why the theory can be applied to that location. Clarity in this section will lead to a set of achievable objectives, i.e. the work you will carry out in the field. Your teacher/supervisor is a resource of advice and guidance which you should use to ensure you are progressing correctly, but the ownership of the work clearly belongs to you, the student. By the time you come to data collection, you should be confident that the fieldwork is fully prepared (Figures 1 and 2).

### Methods of investigation (how, what, when, where, why?)

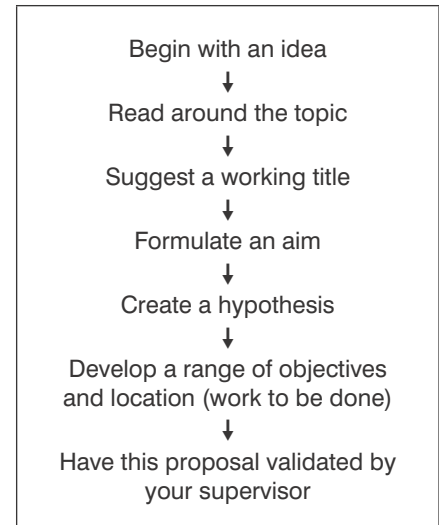
You should indicate clearly how you will obtain your data and how you expect to test the hypothesis. The methods of investigation must be well

laid out and explained by reference to geographical literature. You must be thorough and try to show some imagination, e.g. make your own slope pantometer or quadrat. You need to state what equipment was used: where, how and when the data was recorded, and justify the collection of each piece of data.

Whatever methods are used they should be piloted (tested). For a physical geography study find a location to test out the equipment and ensure you can obtain accurate results. In human geography studies, if using a questionnaire it must be piloted, and if the questions do not generate the correct type of response, the question is reworded and retested. You should be able to say why every question is being asked and how it contributes to the overall study. Justify the location of data collection sites. The purpose of piloting is to make the actual data collection easier, so amending a question or rewriting a table is all part of the evaluation of methodology and indicates piloting has been carried out. In all studies ensure you know how to use keys when identifying buildings or vegetation and you have plenty of prepared recording sheets ready (see **Geofiles** 509, 551).

The accuracy you apply to collecting data makes the interpretation and the conclusions more or less valid. It is also important to think ahead regarding the types of maps and graphs you will produce. Your sampling procedure is important here. How many transects have you

Figure 1: Fieldwork flowchart



selected? Just one would be point analysis. If more than one, where are they and how were they chosen? With questionnaires, sampling size and method are crucial. In a tourist hot spot, 100 questionnaires recorded on a sunny Sunday in August would reveal very different results to 100 recorded for a full week in August. A city microclimate study would require many sampling points if the intention is to produce isotherm maps of a heat island effect. How many soil pits on a catena would be needed for statistical tests later in the study? The use of secondary data is usually possible, but be selective and acknowledge the source e.g. census data, Goad plans, rainfall data. You could include here a statement of deficiencies with equipment, problems encountered with a questionnaire or operator inefficiency. However, good

Figure 2: Fieldwork introduction (example)

Title:	An investigation into retail clusters in the CBD of Leeds.
Aim:	To find out if and why shops cluster by retail type in the CBD of Leeds.
Location and theory:	Demonstrate link between theory and the location chosen.
Hypothesis:	There is no clustering of retail outlets in the CBD of Leeds.
Objectives:	1a. Land use survey of Leeds CBD.
	1b. Obtain Goad plan for ten years ago in order to study change through time (secondary data).
	1c. Pedestrian densities associated with land use.
	1d. Questionnaire to ascertain shopping habits.
	2 Pilot study of the above and amend as required.

fieldworkers always solve the problem. They have spare equipment available, have alternative recording methods, rewrite a document to achieve clarity, do not rely on electronic equipment, and do not complain if the weather is wet or cold!

## Skills and techniques

At this point, mark schemes often separate skills and techniques from interpretation; in reality you will be using your data to draw your maps and graphs, interpreting them alongside each other. With all techniques it is important to select the most useful one for the task so they can be interpreted in relation to the hypothesis set and thereby achieve the aim. Accuracy is essential with all techniques. Cartography can reveal many spatial patterns and the geographer has a battery of map types to portray statistical data. All maps need scale, title, key and orientation. Graphs need to go beyond the basics, to include scatter graphs, triangular graphs, histograms and divided bars. Diagrams include: field sketches, cross sections, long sections, slope profiles, transects and stellar diagrams. Photographs are useful but they need to be annotated and analysed alongside other data. The skills and techniques are an aid to the description, analysis and interpretation of the data.

At this point, relationships between sets of data may have become apparent, especially where two sets of data have been graphed against each other, and this is where a statistical test can be used. Scatter graphs with correctly fitted 'best fit' lines can indicate the initial strength of a relationship. Some specifications restrict the range of statistical tests, but Spearman rank, Chi squared ( $\chi^2$ ), mean and standard deviation, nearest neighbour and Mann Whitney will be the most popular. Whichever ones are used, they need to be set out correctly, starting in many cases with a null hypothesis before manipulating the data and coming up with an answer. Better candidates establish a hypothesis H1, then a null hypothesis H0 to state that there is no relationship. The answer has to be checked for significance against printed tables. Data is said to be significant at the 99.9%, 99% or 95% level. The two higher significance levels are more acceptable. Once the data has been confirmed as significant, then the null hypothesis

can be rejected and the H1 accepted. Reasons can be analysed to explain the relationship. It must not be assumed that one set of data causes another.

## Interpretation (description, analysis, and explanation of the data)

Your processed data is interpreted to examine and then prove or disprove the hypothesis. Show that you understand the results and refer back to each objective. Mere descriptions are not enough at this point; you need to explain, interpret and/or evaluate the data, cross-reference your theory and attempt to explain any anomalies, rather than just ignore them. It is worth remembering that this section discriminates between candidates more than any other section, because most people can gather and process data, but interpretation (reasoned explanation) of data requires greater insight.

## Communication

Your work needs to be well written, logically ordered and have some originality. Your language must use appropriate geographical terminology and show you understand the concepts involved. There will be no major spelling or grammatical errors. If you use the fieldwork model the report will be subdivided into sections with sub headings. A contents page is required, a properly referenced bibliography indicates the range of books, websites and other sources used, and pages need numbering (pagination). Ensure your maps, graphs, photographs are all titled and cross-referenced in the text. Ask someone to read your work and ensure they can follow the sense of it, pointing out any perceived errors that you can correct before it is submitted. These final tasks can take time and if not done indicate a rushed incomplete report.

## Conclusion

If you follow the path suggested in this **Geofile** or similar pathway in your examination specification, you should have produced a cohesive and logical study (Figure 3). The conclusion must have a very clear summing-up linking the theory to the conclusions. It should summarise the findings in relation to the original aim/hypothesis and be constructively critical of the findings in relation to the theory discussed. Evaluate the success of

the whole report and suggest further avenues of study. Show that you are knowledgeable on how far the work has satisfied your aim/hypothesis.

## Practical suggestions

- Consult with your teacher/supervisor throughout the process.
- Specific help, instructions, guidance will be outlined in your examination specification; read it carefully.
- Look at previous fieldwork that has been submitted and gained high marks.
- Read the chief examiner's reports in order to avoid simple pitfalls and use the mark scheme to see where marks are gained.
- Computer assisted design/IT skills can be limited in their range, and repetitive. Remember the computer is only an aid in the preparation of the report.
- There is a range of textbooks dealing with fieldwork studies, fieldwork techniques, skills and geographical data.
- You can be in total control of this part of your work and should be able to gain significant credit towards your final result, leaving you just the written examination papers to concentrate on at the end of your course.

## Fieldwork investigation written examination

The coursework examination is an alternative to candidate-led fieldwork, but undertaking fieldwork throughout the course is still absolutely essential. Although the topic area for the coursework exam may well have been published in advance, the pre-release material will only arrive a few weeks before the exam. Familiarisation with the contents of the pre-release material is of paramount importance for the student. Questions in the examination are likely to follow the fieldwork model, so with the teacher acting as facilitator and in a group situation for ideas to be discussed, lots of questions need to be pursued.

### Introduction (Title, aim, hypothesis, objectives)

Get to know and understand the purpose of the enquiry; find out the theory underpinning the study – your teacher may point you to a couple of useful references. Know the location of the study area and why it has been used. The title will be amplified in the aim and then objectives identified,

Figure 3: Fieldwork investigation

Section	Details	Typical % marks	Other remarks
1. Introduction	Title, aims, hypothesis, objectives. Context: theory and location.	10	Human aspects of physical studies may be needed. Spatial and temporal elements included. Hand-drawn location maps necessary.
2. Methods of investigation	List of data to be collected. Recording tables. Equipment. Location of data collection points. Sampling techniques. Piloting + amendments. Evaluation of methodology.	25	Collect data systematically in relation to each objective. Must have plenty of data to prove/disprove hypothesis. Data collection tables vital. Plan for the environment you work in.
3. Skills	Maps, graphs, diagrams, sketches, photographs to present the information.	25	Use a range of techniques to summarise and present the data.
4. Interpretation	Detailed description, analysis, explanation to find trends and patterns. Statistical techniques to carry analysis further.	25	Data should be discussed in relation to each objective. Links between data become apparent. Statistical techniques prove/disprove the validity of these links.
5. Communication	Spelling, punctuation, grammar. Geographical terminology, cross referencing. Pagination, contents page, acknowledgements.	5	Affects all sections. Poor communication can ruin an otherwise good report. Good communication means report is clear, succinct and easy to understand.
6. Conclusion	Very clear summary related to each objective and aim. Critical of the findings. Further possible study.	10	Should leave a clear impression of what has been achieved.

which may be both spatial and temporal. What other theory might be useful or knowledge about a location? Read around the topic and location.

**Data collection**

You need to interrogate the data presented:

- What is the range of data collected?
- Understand the sampling techniques used.
- Is there any other data that could have been collected?
- What equipment has been used?
- How does the data fit the maps and photographs provided?
- Is any secondary material used? If so, how does it complement all the other data?
- Does the secondary data help widen your understanding of the location?

Understand the advantages and disadvantages of the range of data and equipment used. Correlate all the information to develop an understanding of the location. Throughout this process, the range and format of the questions that could be asked will become foremost in your mind (Figure 4).

**Question 1 Aim**

You may be asked to write and justify a (null) hypothesis for part of the study or create and justify another objective. What was the inspiration for this study, or what helped define the study area? How were the study sites located?

**Question 2 Methods**

Alternative methods of data collection may be required with their advantages and disadvantages, which implies you will have experienced a variety of data collection techniques in a range of physical and human locations throughout your course. Questions may ask you to identify weaknesses with data and how they should be overcome. Questions on sampling technique are very common: sample size, location of the sample, justification of questions in a questionnaire and alternative questions based on the objectives. Similarly, alternative useful sources of secondary data could be asked for.

**Question 3 Skills techniques and interpretation**

The completion of a graph using the data provided, annotation of a photograph, drawing a sketch from a

photograph with labels are all initial tasks that may be required. You will then be expected to analyse the patterns in some detail and suggest reasons for these patterns and any changes.

A statistical test may be included in this section. It may require you to set up a null hypothesis or complete some of the statistical manipulation, but usually you have to interpret the value of the calculation against critical value tables/significance levels. Secondary data may well lead to a question to compare the collected short-term data to the secondary long-term data. Command words here are vital. *Complete* and *describe* are low-level commands, but *explain*, *compare*, *assess*, *interpret* and *evaluate* are high-level commands, rewarded with higher marks.

**Question 4 Conclusion**

This section may require an overview of the coursework so the question could well suggest a writing plan. For example: 'Write a conclusion to this enquiry with specific reference to the aim and objectives given. Using your own experience of conducting an enquiry,

Figure 4: Coursework examination

Title provided in advance. Pre-release material arrives.	Read around this area of work. Ensure own fieldwork has contributed to the title. Know, understand and manipulate the data presented.	Possible distribution of marks (%)
<b>Two hour assessment</b> Understand the aims and the theoretical concepts in relation to the location.	<b>Questions</b> Relates issue to objectives. Aware of nature of study and location used. Refers to own fieldwork.	Aim (6)
Understand and evaluate the methodology, the collection of data and the other primary/secondary sources used.	Advantages/disadvantages of each method. Justification of methods used. Improvements needed for data collection. Practical problems.	Method (16)
Consider the presentation of data: the range of cartographic, graphic and statistical techniques.	Skills and interpretation questions interconnected. Apply data to incomplete graphs etc. Complete statistical analysis.	Skills and interpretation
Description, analysis and explanation of data will need to refer to the aims and objectives.	Describe and analyse results. Interpret spatial patterns and temporal changes in relations to the objectives and aim.	mark combined (55)
Conclusion	Refers to all objectives using data. Aware of limitations. States how far aims and objectives met. Critically evaluates the whole enquiry. Extensions to the study. Uses own experience of fieldwork	Conclusion (10)
How may additional data be collected. Enquiry related issues.	Propose a hypothesis (derived from data). Data that could be collected (sampling) and its justification. Fieldwork experience valid here. Risk assessment issues.	Enquiry related issues (13)
Communication	Use of appropriate English, relevant geographical language. Longer answers have a plan. Clarity throughout.	Marks throughout other sections

you should, in addition, consider the reliability of your findings and consider how the enquiry could be extended and improved' (10 marks).

For this question, your plan could be:

- Objectives: Have they been achieved? How? Refer to specific data, limitations, aware of shortcomings.
- Aim: Has the overall aim been achieved? Fully/partially? Evaluate the extent to which the aim has been achieved.
- Reliability of findings: Limitations of the study. Cross-reference the fieldwork you have done, e.g. city work, rural studies, river investigation, coastal.
- Extension: Own experience again. Comparative study always a useful idea.
- Improvements: Solutions to the limitations. Develop this plan and the potential for high marks is clear.

**Question 5 Enquiry-related issues**

Finally, there could be a section about taking the study further, asking questions to create a hypothesis that could be investigated in relation to

your chosen variable. What data would be collected, and how; even a reference to health and safety precautions to be taken.

**Practical suggestions:**

- Look at the pre-release material from previous exams and work through at least one similar example about three months before the final exam.
- Read the recent chief examiner's reports so that you can see where marks can be gained and the sort of errors to avoid.
- Most important are the marks allocated to each section. For two marks, have you made two points or stated a concept and amplified it? Examples are useful here (see Conclusion above) (Figure 4).
- Look for opportunities to be specific about your own fieldwork and draw on ideas you have experienced.
- Link your answers to the objectives and how they each contribute to the aim.
- Using a past paper, the mark scheme and chief examiners report create a model answer for questions 4 and 5.

**Overall summary**

Whichever route you choose, personal investigative fieldwork or the fieldwork examination, both are equally demanding and both have the same mark value. Do not be tempted to think the two-hour examination is 'easier'; it can be very demanding and difficult to express all you want in the time available. The fieldwork investigation puts you in charge and is completed quite a few weeks before the written papers. It may also provide you with an opportunity to write a complete report, something you are likely to have to do in further and higher education and at work – another life skill practised in geography.