

IGCSE

London Examinations IGCSE

Geography (4370)

First examination May 2005

November 2003

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Teacher's Guide

London Examinations IGCSE

# Geography (4370)

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Publications Code: UG013043

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# Introduction

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This Teacher's Guide accompanies the London Examinations IGCSE specification for Geography (4370) and has been designed to help teachers prepare their students for first assessment in 2005 and thereafter.

The guide should be used in conjunction with the specification (publication code UG013068) and the specimen papers and mark schemes (publication code UG013057). It provides sections to help teachers with

- tiers of entry
- the structure and requirements of the specification
- course planning
- the nature of coursework
- geographical skills
- using ICT in geography (where possible)
- assessment requirements – external assessment
- assessment requirements – internal assessment
- assessing students' work
- textbooks and resources
- support and training.

The differences between this specification and the GCE Ordinary level in Geography (7209) may be summarised as follows

- a more selective approach to physical and human geography, achieved through the study of six specific themes (water, hazards, production, development, migration and urban environments)
- a drawing together of the systematic branches of geography, in the study of three specific issues of the modern world (fragile environments, globalisation and human welfare)
- a unifying focus, provided by the concept of sustainability, which overarches the four units
- a greater emphasis on the acquisition of a range of geographical skills
- a tiered entry
- a reduced examination load
- an opportunity for some centres to submit coursework.

## Tiers of entry

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Students are entered for either Foundation Tier or Higher Tier.

The **Foundation Tier** paper (**1F**) is designed for students who are unlikely to achieve a high grade, but whose achievement can still be recognised with a grade at the appropriate level. No matter how well students may do on the Foundation Tier paper, the highest grade they can be awarded is grade C. Students who fail to achieve grade G will be awarded 'Ungraded'.

Although the subject content is the same for both tiers, the **Higher Tier (2H)** questions are more demanding. The highest grade which can be awarded on Higher Tier is A\*, a grade reserved for only the highest achievers at the top of grade A. Questions in the Higher Tier are targeted at grades A\* to D, but there is a 'safety net' for those who narrowly fail to achieve grade D. A grade E can be awarded to students who are within a few marks of grade D. Students who fail to achieve the safety net grade E will be awarded 'Ungraded'.

The Foundation and Higher Tier papers take place at the same time, so students cannot be entered for both examinations. This puts a responsibility on the teacher to ensure that a student is entered for the appropriate tier. Students who consistently achieve grade C standard work in practice tests, would normally be entered for the Higher Tier, where they have the opportunity to achieve the higher grades.

Because of the overlap at grades C and D between the two tiers, there are some questions which are common to both tiers. The Higher Tier candidates will be required to answer additional or more challenging question parts on each topic - see *Specimen papers and mark schemes* (Publication code: UG013057).

The only tiered papers are 1F and 2H.

### Coursework and Paper 03

Coursework and Paper 03 are common to both tiers, and test achievement across the whole range of grades from A\* to G.

# Structure of specification

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The specification is made up of four units, each with a particular theme. Units 1, 2 and 3 comprise two integral sub-units, built around three key ideas. Unit 4 focuses on three issues that overarch much of the content of Units 1, 2 and 3.

Candidates should study **all** parts of Units 1, 2 and 3, and at least **one** of the issues in Unit 4.

## **Unit 1 - People and the natural environment**

**A** – Water

**B** – Hazards

## **Unit 2 - People and work**

**A** – Production

**B** – Development

## **Unit 3 - People and places**

**A** – Migration

**B** – Urban environments

## **Unit 4 - Global issues**

**A** – Fragile environments

**B** – Globalisation

**C** – Human welfare

## Assessment requirements

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The scheme of assessment is in two tiers. **Foundation Tier** candidates take Papers 1F and paper 03 or component 4 (coursework); **Higher Tier** candidates take Papers 2H and paper 03 or component 4 (coursework). Candidates from **approved centres** may submit **one** item of coursework in lieu of Paper 03. This item will be internally assessed and externally moderated (see next section).

### Summary of scheme of assessment

Paper/ component	Mode of assessment	Weighting	Length
1F	Examination <b>Paper 1F</b> , targeted at grades C – G  (Foundation Tier)	80%	1 hour 45 minutes
OR			
2H	Examination <b>Paper 2H</b> , targeted at grades A* – D  (Higher Tier)	80%	2 hours 30 minutes
3	Examination <b>Paper 03</b> , targeted at grades A* – G  (common to both tiers)	20%	1 hour
OR			
4	<b>Coursework</b> , targeted at grades A* – G  (common to both tiers)	20%	–

### Papers 1F and 2H

Written papers, 1 hour 45 minutes and 2 hours 30 minutes respectively.

These papers are divided into **two** sections. Section A consists of **six** compulsory structured, data-response questions (15 marks for each question in Paper 1F, 20 marks in Paper 2H). One question is set on each of the sub-units of Units 1, 2 and 3. Section B comprises three structured questions, one set on each of the three sub-units of Unit 4. Candidates are required to choose **one** of these. A variety of resources will be used in the examination. These may include maps, graphs, diagrams, newspaper articles, photographs and satellite images.



In Paper 1F, the questions largely require short-answers. The equivalent questions in Paper 2H share some of the question elements and most often the stimulus materials with Paper 1F, but the inclines of difficulty are steeper and there are more opportunities for extended writing.

Differentiation will be achieved by

- **task** – stimulus materials may differ between the tiers, and there will be more demanding tasks in Paper 2H
- **outcome** – since there will be some questions which are common to both tiers, the mark schemes will credit different levels of response.

Foundation Tier candidates are recommended to spend between 10 and 15 minutes on each question in Section A, to allow at least 20 minutes for the chosen question in Section B.

For Higher Tier candidates, the equivalent recommended times are 20 minutes on each question and 30 minutes for the chosen question in Section B.

These papers account for 80% of the overall assessment.

### **Paper 03**

Written paper, 1 hour.

This paper is untiered and comprises **three** compulsory structured questions (20 marks each). The two questions in Section A are skills-based, whilst that in Section B is enquiry-based. The aim of this paper is to test the skills and experience gained by candidates from practical work and fieldwork, undertaken during the course, in both physical and human geography. The questions in Section A may include resources such as maps, diagrams and photographs.

Candidates are advised to spend no more than 20 minutes on each question.

Differentiation will be achieved by

- **outcome** – since the questions are untiered, the mark schemes will credit different levels of response.

This paper accounts for 20% of the overall assessment for both tiers.

## Assessment objectives

Candidates must demonstrate their ability to

- AO1** demonstrate knowledge of places, environments, themes and issues, ranging in scale from local to global
- AO2** show understanding of the specification content
- AO3** apply their knowledge and understanding in a variety of physical and human contexts
- AO4** select and use a variety of skills and techniques, appropriate to geographical studies and enquiries.

## Relationship of assessment objectives to assessment components

### Foundation Tier

Assessment objectives	Mark range for Paper 1F (total 110) weighted to 80% of final grade	Mark range for Paper 3 (total 60) OR Component 4 (total 60) weighted to 20% of final grade	Overall weighting
AO1	30-40	0	25%
AO2	30-40	0	25%
AO3	15-20	15-25	20%
AO4	20-25	35-45	30%

## Higher Tier

Assessment objectives	Mark range for Paper 2H (total 150) weighted to 80% of final grade	Mark range for Paper 3 (total 60) OR Component 4 (total 60) weighted to 20% of final grade	Overall Weighting
AO1	33-42	0	20%
AO2	33-42	0	20%
AO3	38-50	15-25	30%
AO4	28-35	35-45	30%

These tables give the intended weightings for each assessment component at the two tiers. However, in any particular examination series, the weightings for the examination papers may vary slightly.

## Marking

Two types of marking strategy are employed in the external assessment.

### Points marking

Candidates are credited for each valid point made. The wording of the question is used to determine the validity of the points offered. It is most likely to be used where candidates are instructed to 'define', 'describe', 'identify', 'label' or 'complete' a table.

### Levels marking

This is used where questions require explanation rather description. For example, a question requiring 'reasons for' could not get full marks if only one reason is offered in depth – some breadth would be needed. The hallmarks of different levels of attainment are identified. Not all points mentioned in the mark scheme for each level need to be met for an answer to start scoring at that level. It is possible for candidates to reach a score through either the breadth or depth of their answer.

**The answers suggested in the mark schemes are for guidance only.** In many cases, it will be possible for candidates to offer valid plausible alternatives. Examiners are required to use their professional judgement to decide whether a given answer is acceptable. In case of any doubt, the 'answer' (i.e. valid plausible alternatives) will be referred by the examiner to either the team leader or the principal examiner.

Where appropriate, annotated diagrams are acceptable as a substitute for text and can gain full marks if they meet the requirements of the mark scheme.

## The specimen papers and mark schemes

Below is some commentary on selected questions from the specimen papers and their mark schemes (Publication code: UG013057). They aim to show

- the nature of the questions to be set in the different examination papers
- the difference between the tiers
- the expected responses
- the marking strategies in operation.

### **Please refer to question 1(a) of specimen paper 1F and question 1(a) of specimen paper 2H.**

Both versions of question 1 use the same stimulus materials - a diagram and a map. Part (a) is common to both. A steeper incline of difficulty is built into part (b) of 2H, and this is maintained throughout part (c).

### **Please refer to question 3(a) of specimen paper 1F and question 3(a) of specimen paper 2H.**

The question in Paper 1F, 3(a), is more accessible than the equivalent question in the Higher Tier. The stimulus material is different in (b) - a table as opposed to a triangular graph. In (c) there is a common resource, but again there is a clear difference in the level of questioning.

### **Please refer to question 8(b) of specimen paper 1F and question 8(b) from specimen paper 2H**

The two resources are the same in both questions and part (a) is shared. There is some divergence in the level of questioning in (b), but a more extended questioning is in evidence in (c).

### **Please refer to question 2 and question 3 from specimen paper 03**

Whilst the questions in paper 03 are untiered, they do contain inclines of difficulty. This is very evident in Question 2. In Question 3, part (a) gives the candidate a chance simply to recount part of a fieldwork exercise, but in (b) the call for evaluation clearly sets a higher level of demand.

# Course planning

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## Allocating time

Since the content of the specification is both conceptual and issues-based, it divides into

- three traditional units of approximately equal size, each subdivided into two sub-units that build on three key ideas
- a global issues unit that addresses three issues of the modern world. Each of these may be seen as a sub-unit focused on a single key idea.

This section aims to help teachers to put together a course that covers the specification's 21 key ideas.

The specification is designed to be delivered as a two-year programme. In terms of teaching, there are no reasons why all four units should not receive approximately equal treatment. A suggested allocation of 15 weeks for teaching each unit is arrived at if it is assumed that

- the whole course will be covered during a period of five terms, with the short sixth used for revision
- there would be at least one-and-a-half hours of lessons and one homework per week.

Assuming that, in the case of Unit 4, at least one of the three sub-units will be taught, around seven weeks should be allocated to each sub-unit. Teaching more than one of the Unit 4's sub-units is to be recommended on the grounds of, i) ensuring a greater and more balanced awareness and understanding of the unifying concept of sustainability, and ii) offering candidates more question choice in the examination.

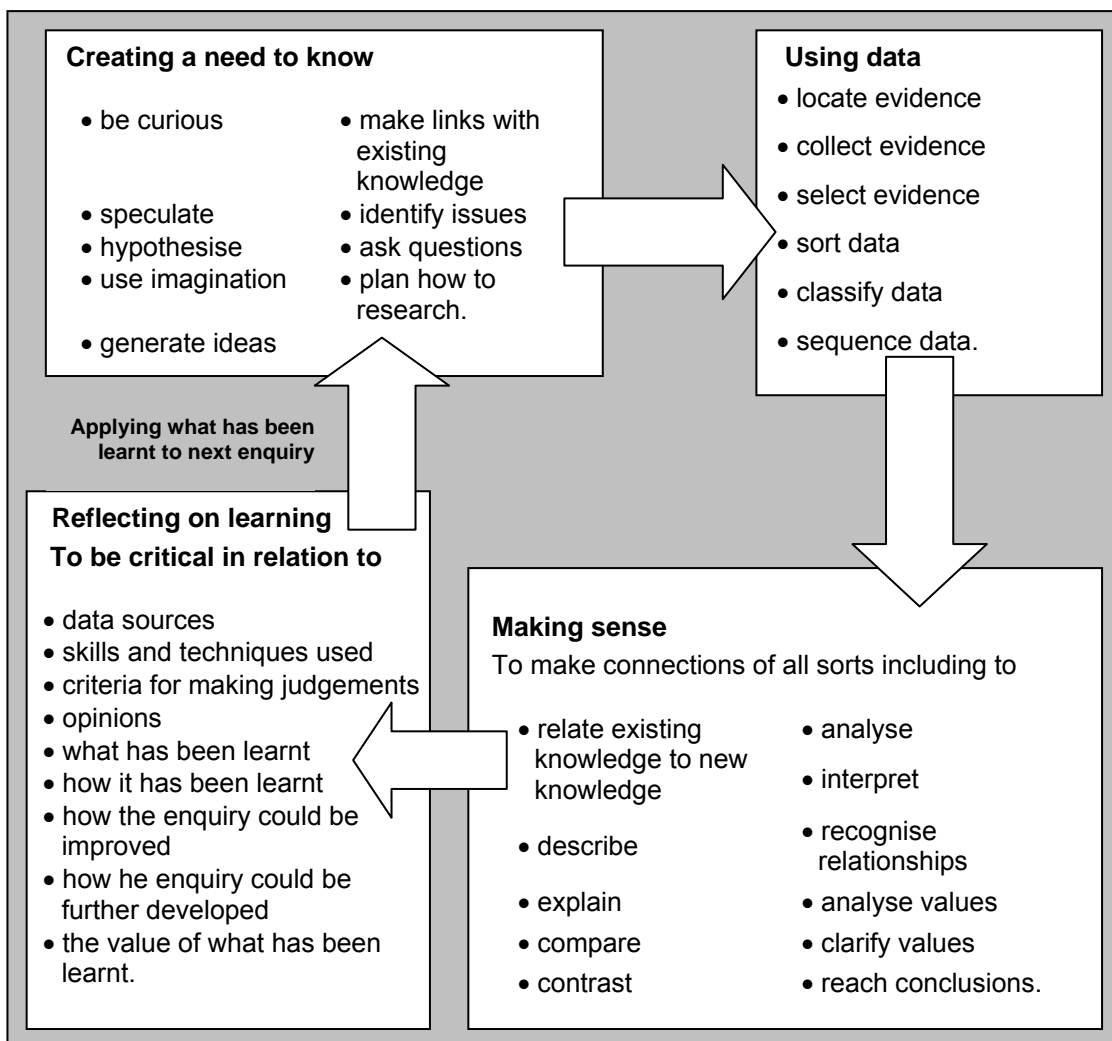
It is important to remember that some of that teaching time should be set aside for related practical and fieldwork.

It is recognised that the above time parameters may not suit all centres or all candidates. However, a programme lasting roughly 60 weeks should also allow sufficient time for examination practice and revision.

## Learning through geographical enquiry

In Unit 4, the three global issues of 'environmental fragility', 'increasing globalisation' and 'varying human welfare' can be seen as overarching concepts that are underpinned by knowledge and understanding from the other six sub-units. Issues are best studied using a sequence that starts with **effects** (impacts/consequences), is then followed by **causation** and ends with **management**. Remember that management and change are central to the ethos of this specification, as are sustainability and people-environment links.

Global issues questions and those of the Hazards sub-unit of Unit 1, in particular, require the adoption of a **learning through geographical enquiry** approach. It is suggested that teachers encourage candidates to become familiar with this approach (see below) and for teachers to follow it wherever and whenever it facilitates and enhances coverage of the Specification's essential content.



The diagram provides a framework and shows the four essential aspects of the enquiry approach – creating a need to know; using data; making sense and reflecting on learning.

The table below indicates the types of thinking associated with each of the four aspects of the enquiry approach.

<b>Aspect of enquiry</b>	<b>Activities</b>	<b>Thinking skills</b>
<b>Needing to know</b>	<ul style="list-style-type: none"> <li>● ask questions</li> <li>● identify issues</li> <li>● suggest how to investigate questions</li> <li>● suggest appropriate sequences of investigation.</li> </ul>	<ul style="list-style-type: none"> <li>● pose and define problems</li> <li>● ask relevant questions</li> <li>● generate ideas</li> <li>● use imagination</li> <li>● plan what to do and how to research</li> <li>● suggest hypotheses</li> <li>● predict outcomes</li> <li>● anticipate consequences</li> <li>● extend ideas.</li> </ul>
<b>Using data</b>	<ul style="list-style-type: none"> <li>● collect evidence</li> <li>● select information and sources of evidence</li> <li>● record data</li> <li>● present evidence</li> <li>● select skills and techniques.</li> </ul>	<ul style="list-style-type: none"> <li>● locate and collect relevant data</li> <li>● sort</li> <li>● classify</li> <li>● sequence.</li> </ul>
<b>Making sense</b>	<ul style="list-style-type: none"> <li>● describe</li> <li>● explain</li> <li>● analyse evidence</li> <li>● recognise relationships</li> <li>● appreciate values and attitudes</li> <li>● draw and justify conclusions</li> <li>● communicate</li> <li>● draw out geographical ideas and theories.</li> </ul>	<ul style="list-style-type: none"> <li>● compare and contrast</li> <li>● analyse relationships</li> <li>● draw inferences</li> <li>● make deductions</li> <li>● make judgements informed by reasons or evidence</li> <li>● make decisions</li> <li>● test conclusions.</li> </ul>
<b>Reflecting on learning</b>	<ul style="list-style-type: none"> <li>● evaluate critically sources of evidence</li> <li>● evaluate</li> <li>● evaluate critically</li> <li>● suggest improvements</li> <li>● suggest further lines of enquiry.</li> </ul>	<ul style="list-style-type: none"> <li>● evaluate information</li> <li>● give reasons for opinions</li> <li>● explain thinking</li> <li>● use precise language</li> <li>● judge value of what has been read</li> <li>● develop criteria for judging the value of their and others' work</li> <li>● look for alternative innovative outcomes</li> <li>● improve ideas</li> <li>● have confidence in judgements.</li> </ul>

## Designing a course

Teachers are free to construct their own teaching programme and scheme of work, to explore the required content of the specification. Avoidance of content overload is a prime consideration. The 'essential content' column in the specification content should help to achieve this, and yet at the same time, encourage a wide-ranging approach to the subject. Similarly, the 'required exemplification' column, whilst providing general guidance, should be seen as inviting centres to choose their own case-studies to illustrate the essential content. Local case-studies and a depth of study are to be encouraged.

The specification has been developed so that candidates can all be taught together, irrespective of their tier of entry, and so that many resources presently used in the teaching of other courses (e.g. London Examinations O level Geography) remain appropriate.

There are at least four possible ways of organising the teaching programme for this specification:

### **Programme 1. Following the order set out in the specification document, with coursework treated as an independent unit of work.**

This possible programme, shown below, may well be a popular one. Remember that the specification requires that all candidates should study at least one (not necessarily all) of the sub-units of Unit 4.

#### **Year 1**

<b>Term 1</b>	<b>Term 2</b>	<b>Term 3</b>
Water	Production	Migration
Hazards	Development	Coursework

#### **Year 2**

<b>Term 1</b>	<b>Term 2</b>	<b>Term 3</b>
Urban environments	Fragile environments or Globalisation	Practice and revision
Coursework	Globalisation or Human welfare	Examination



## **Programme 2. Teaching the sub-units in an alternative order to that shown in programme 1**

For example, the teaching of Unit 1 might be followed by coverage of Unit 4A; Unit 2 by Unit 4B, and Unit 3 by Unit 4C. This is because there are sequential links. A knowledge and understanding of Water and Hazards leads naturally into, and provides vital background to, some of the essential content of Fragile Environments. Similarly, Production and Development are basic dimensions of Globalisation and therefore serve well as a preface. Migration and Urban development both have significant outcomes in terms of Human welfare.

## **Programme 3. Linking the coursework to a particular sub-unit**

This approach may be favoured when a teacher wishes to integrate coursework into a specific sub-unit. For example, a river fieldwork investigation might be planned as an integral part of the delivery of the Water sub-unit, or a specific survey work on a town might be undertaken in tandem with the teaching of the Urban Environment sub-unit (3B). Some amendment of time allocations set out in the Programme 1 diagram would be required.

## **Programme 4. Using a teaching linkages approach**

It is possible to link, not only coursework to a particular sub-unit, but also the three global issues of Unit 4 to aspects of the sub-units of Units 1, 2 and 3. This integration of issues with traditional geographical concepts may help candidates prepare for any possible 'sub-unit overlap' questions in the examination. A way in which this might be undertaken is shown in the two different formats which follow.

### **First format**




(see next page)

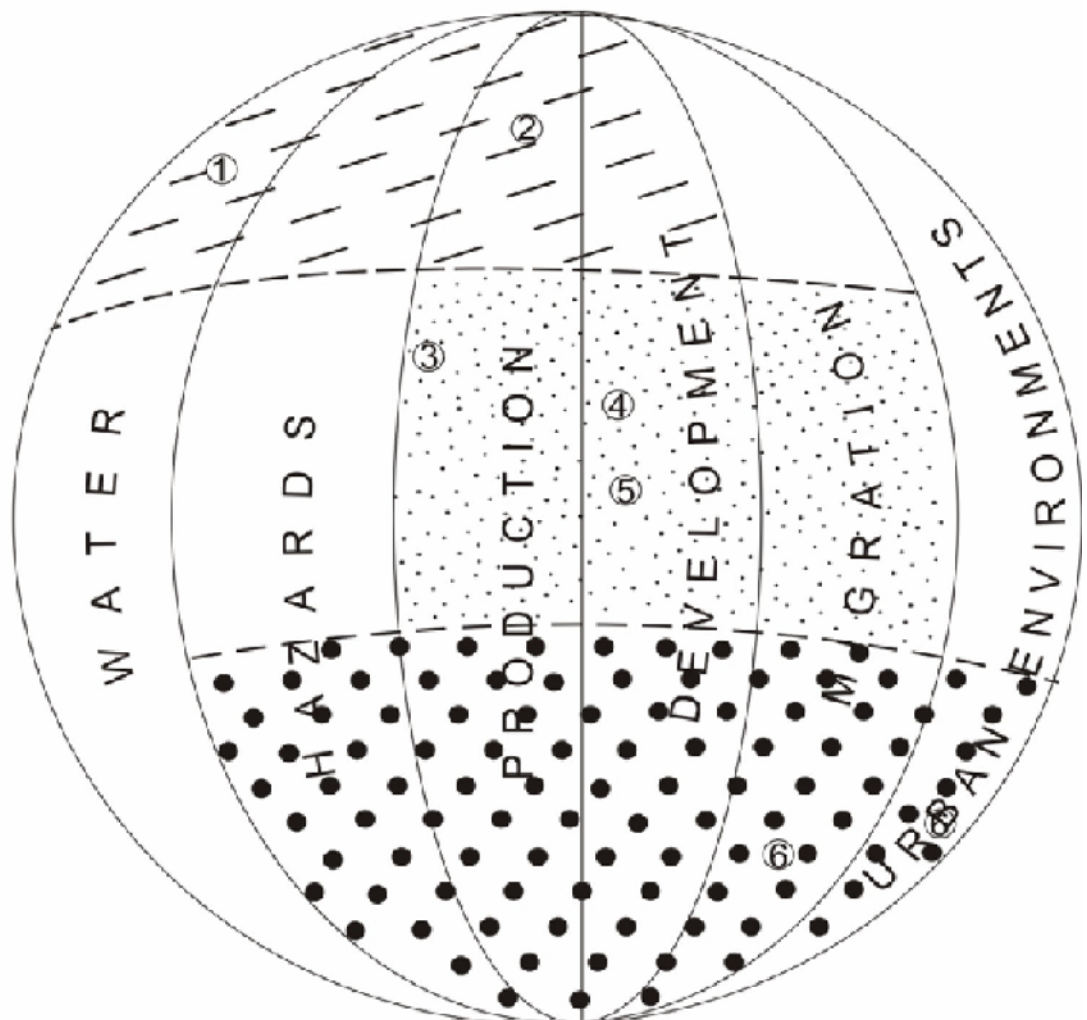
**First format**

**Examples of linkages**

1. Desertification
2. Deforestation
3. Interdependence and global tourism
4. Global shift and TNC's
5. Quality of Life
6. Population growth and Regional / Urban dispositions

**Opportunities for:**

-  Fragile Environment Teaching
-  Globalisation Teaching
-  Human Welfare Teaching



## Second format

### Year 1

Term 1	Term 2	Term 3
Fragile environments/Globalisation/Human welfare		
Water (desertification) Coursework	Production (deforestation; global warming; interdependence; global tourism)	Development (global shift; TNCs; quality of life)

### Year 2

Term 1	Term 2	Term 3
Fragile environments/Globalisation/Human welfare		
Hazards Migration (population growth; regional disparities)	Urban environments (population growth; urban disparities) Coursework	Practice and revision Examination

## Subject-specific information, including coursework

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All students should undertake fieldwork and practical work as a routine element of their learning. The skills which students acquire in doing this will be assessed either by paper 03 or by the coursework option (for Edexcel-approved centres only). Either of these components will account for 20% of the final assessment.

Candidates in centres which are approved to undertake the coursework option will submit **one** item of coursework, as detailed on page 20 of the specification.

### Geographical skills

It is required that, both in the course of covering specification content and during the completion of fieldwork, candidates should be made aware of and exercise the following skills

- map skills – with particular reference to topographic maps: using grid references, understanding scales, recognising landforms and human features of the landscape, seeing relationships between phenomena
- atlas skills – using an atlas wherever relevant in the course
- sketching skills – communicating ideas through simple sketch maps, field sketches and diagrams
- graphic skills – compiling graphs and scatter graphs, using proportional symbols, annotating diagrams
- photo-interpretation skills – reading vertical and oblique aerial photographs, satellite images
- statistical skills – using measures of central tendency (mean, mode, median), dispersion (interquartile range, standard deviation) and correlation (Spearman rank).

### The nature of fieldwork

Fieldwork is an integral and important component of the specification. Its aim is, i) to give students an opportunity to use, and become proficient in the use of a range of geographical skills (see *Geographical Skills* and *Using ICT in Geography* below), and ii) to provide firsthand experience that underpins knowledge and understanding of the key ideas.

Assessment of fieldwork is achieved either by Paper 03 or by the submission of a report based on a single fieldwork investigation (the Coursework component 4). The investigation may be undertaken on an individual or group basis, but in the latter case it will be necessary for each candidate to demonstrate their individual contribution.

Fieldwork is a requirement for both forms of assessment. Fieldwork is understood as the firsthand observation, collection and recording of geographical information by students themselves, outside the classroom and most likely in their local area. No matter what assessment route is taken, the same six-stage investigation sequence should be followed by all candidates

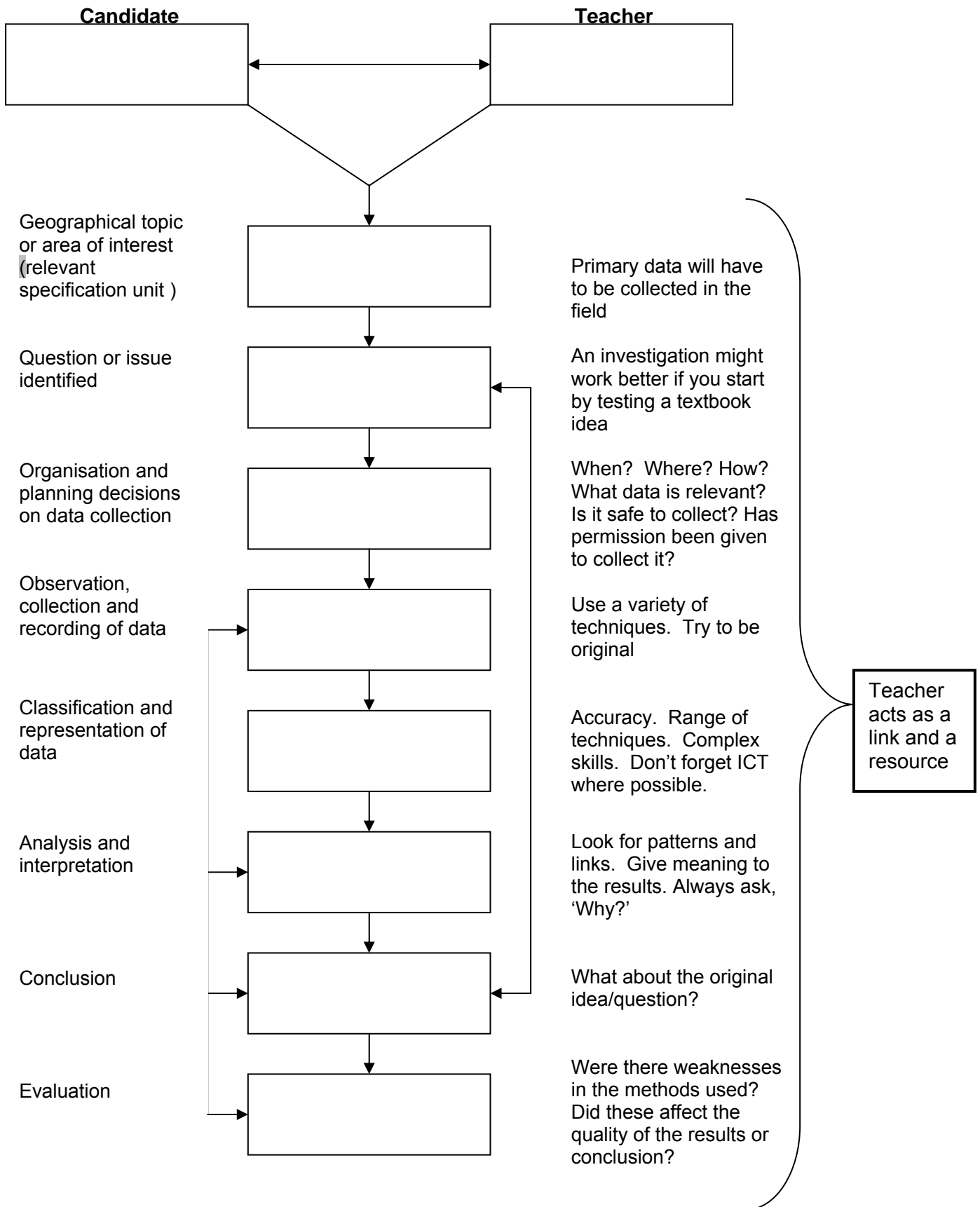
- planning the topic for investigation
- defining the aims and setting the scene
- planning and undertaking the collection of appropriate data
- analysing the data and presenting results
- interpreting results, drawing conclusions
- evaluating the investigation.

At centres approved to offer the coursework assessment option (Component 4), candidates will have to show evidence of all five stages in their report. At centres where candidates sit the practical paper (Paper 03), the evidence will be demonstrated in both sections. The emphasis will be on the last two stages of the sequence in Section A, and on the first three in Section B. The questioning may relate to fieldwork in physical or human geography. So it is **strongly recommended** that all candidates taking the Paper 03 route should complete and write up **at least one** fieldwork investigation. These investigations should be of a style that investigates methodically a clearly defined question, hypothesis, situation, conflict or issue, in the sequence of steps outlined above.

## Some general pointers

- fieldwork needs to relate to an aspect(s) of the essential content identified in the specification. However, it is recognised that some sub-units are more suited to fieldwork than others
- fieldwork should be fully integrated into the teaching programme and it should be recognised that **all** local environments offer some fieldwork potential.
- the use of some supporting secondary data may be necessary in some investigations.
- teachers should ensure that the coursework tasks are suitable for both the abilities and interest of individual candidates, as well as the particular circumstances of the centre. Coursework that differentiates by outcome tends to be popular at GCSE, but it is possible to differentiate by task, namely by distinguishing between topics which are more appropriate to Foundation Tier candidates and those which allow Higher Tier candidates to demonstrate what they know and can do.
- fieldwork reports (especially for component 4 candidates) should not be long (a limit of approximately 2,000 words is recommended, but there are no penalties for exceeding or falling below this guideline). It is important that adequate time is devoted to developing and implementing the skills and understanding needed to produce a complete and coherent report. Bear in mind that the work accounts for 20% of the final assessment. Quality matters more than quantity!
- a definitive report title is not the starting point. An appropriate title will emerge as the work develops. The next page shows an Investigation Planning Sheet (IPS) to help with this, whilst the coursework exemplars that close this section illustrate the point about title-setting.

# Investigation planning sheet



- the best fieldwork at this level is a response to a carefully structured exercise directing candidates through the sequence of investigative stages by giving information, instructions, tasks, headings and deadlines
- group work in data collection and recording is fully acceptable, provided that the later stages of the investigation (i.e. after data collection), are the work of the individual candidate
- students should be encouraged to demonstrate a variety of skills and techniques in data collection, analysis and presentation. As regards the last of these, maps, diagrams, tables, photographs and other illustrative materials are what are required
- the incorporation of ICT into coursework can also be extremely helpful (see the Appendix on *Using ICT in Geography*)
- candidates should be encouraged to evaluate the effectiveness and accuracy of their work as it unfolds, for example, the methods used and the conclusions reached
- teachers need to encourage, guide and advise candidates throughout the work whilst holding back from the point where the work ceases to be the candidate's own. If a teacher has to bring pressure to bear on a candidate to ensure that the investigation is completed, then this needs to be recognised in the levels criteria.

## Organising fieldwork – tips for maximum success

The first decision is whether to go for group or individual routes, or possibly a combination of both.

In both cases a **risk assessment** should be completed for the activity – it is vital that no individuals work alone even in a relatively safe village environment.

**Group** activities are very convenient for centres where there are around 20 students, but require a considerable amount of prior organisation.

**Individual** titles require a greater effort for pre-briefing as you cannot achieve economies of scale, but they can automatically lead to greater variety of focus. They are ideal for late arrivals or independent spirits or those who live abroad, even if the preferred centre route is for group work.

If **group work** is planned, it is best to work out a whole series of likely titles **before** the work is organised. Large numbers of titles can be derived from work on one particular topic. For example, a group village survey could yield up to 20 titles, each with a slightly different focus.

Whether it is a good idea for students to choose the focus **before** the group work is done is debatable, as they might concentrate on their 'bit' and not derive maximum benefit from the fieldwork. On the other hand, the data collection might be more purposeful.

The **title choices** will affect the way the fieldwork is organised – essentially deploy the groups to collect the maximum range of data with the maximum feasible area coverage in the time.

**Booking sheets** need a lot of prior preparation, to ensure that the highest quality of data is collected. A selection of successful examples will be available on the website and also from standard texts (see Resources list).

**Sampling** procedures to be used need careful prior planning and discussion with students to ensure understanding of good practice.

All students should be encouraged to take a wide range of **photos** to support their work. A digital camera could be useful as a departmental resource.

Plentiful supplies of **maps** and **secondary data** are vital, especially if the data is collected on an annual field trip away from home. Centres need to retain the findings from previous fieldwork and students to make reference to this as an acknowledged secondary source.

Group **data collation** is best done using computers, to ensure that each student has a group data disk for the whole exercise. It can be used and referred to in class when students are covering their particular topic.

Supplies of wall charts and books are necessary, to give students ideas on representing, presenting and analysing data. Guidance will need to be given on what methods are available (statistical tests, different types of graph and map).

**Students should be made aware** of the desirability of keeping to the 2000 word limit. To this end, the following advice should be borne in mind (see also Appendix 2)

- Only take one hypothesis – or a small area; over-large titles are a problem
- Keep the introduction short (say 300 words).
- Methodology is best summarised in a table showing how, where, why the data were collected, plus comments on the sampling methods used and the limitations of the data.
- Data representation needs prior research to ensure that a range of appropriate methods is used, for example using the right sort of graph. Above all, avoid pages of pie charts and bar graphs. Do some nice hand-drawn diagrams.
- Draw all maps and diagrams and then write the analysis. Diagrams take much more time to complete. Seek advice on what statistical tests to use and how to use them properly. The analysis is likely to be around 900 words.
- Spend time on the conclusion and evaluation. A report that is well rounded off creates a good impression.
- Improve your keyboard skills. It is much better to word process your report as you can more easily polish the general presentation. It will certainly look better than the average hand-written effort.
- Allow time for checking – spell check, putting in figure numbers, scales, tidying up shading, accuracy of contents page and bibliography.
- Keep your fieldwork notes so you can put them in the back of the report, together with photos of you doing the fieldwork, as proof.



## Outline exemplars of fieldwork investigations

<b>Sub-unit 1A</b> <b>Water</b>	
<b>Question/issue</b>	How does the character of a river change downstream?
<b>Aims</b>	<ul style="list-style-type: none"> <li>• to identify differences at three sites</li> <li>• to determine why velocity changes downstream</li> </ul>
<b>Data collection &amp; presentation</b>	<ul style="list-style-type: none"> <li>• base map of drainage basin</li> <li>• sketch maps at each site</li> <li>• measurement of width, depth, gradient and wetted perimeter</li> <li>• velocity measurement across the channel at each site</li> <li>• field sketches, pie charts, scaled cross-sections, scatter graphs</li> </ul>

<b>Sub-unit 1B</b> <b>Hazards</b>	
<b>Question/issue</b>	What hazards have occurred in the local area?
<b>Aims</b>	<ul style="list-style-type: none"> <li>• to establish what hazards (flood, drought, landslide, subsidence, pollution incident, etc.) have occurred</li> <li>• to identify the causes and consequences</li> </ul>
<b>Data collection &amp; presentation</b>	<ul style="list-style-type: none"> <li>• interviews with local officials and elderly residents to establish a chronology of possible events</li> <li>• library research of old newspapers</li> <li>• mapping hazard sites</li> <li>• field sketches of a hazard site showing what happened and why</li> <li>• enquiry as to what has since been done by way of hazard management</li> </ul>

<b>Sub-unit 2A Production</b>	
<b>Question/issue</b>	The visual impact of a new wind farm.
<b>Aims</b>	<ul style="list-style-type: none"> <li>• to determine the views of local residents</li> <li>• to discover whether those views differ as distance from the wind farm increases</li> <li>• to assess the overall impact of the wind farm</li> </ul>
<b>Data collection &amp; presentation</b>	<ul style="list-style-type: none"> <li>• site mapping</li> <li>• field sketches at a variety of locations</li> <li>• photographs</li> <li>• questionnaires</li> <li>• interviews with local planners and the wind farm manager, as well as local residents</li> </ul>

<b>Sub-unit 2B: Development</b>	
<b>Question/issue</b>	The causes and consequences of declining prosperity in a selected locality (inner-city, old industrial, remote rural, etc.).
<b>Aims</b>	<ul style="list-style-type: none"> <li>• to identify the symptoms of decline</li> <li>• to establish the causes</li> <li>• to trace through the repercussions (population structure, unemployment, declining services, etc.)</li> </ul>
<b>Data collection &amp; presentation</b>	<ul style="list-style-type: none"> <li>• mapping the occurrence of abandoned buildings, derelict land and other indicators of decline</li> <li>• interviews with local residents</li> <li>• seek official views on reasons for decline</li> <li>• photographs</li> <li>• reactive planning strategies</li> </ul>

<b>Sub-unit 3A Migration</b>	
<b>Question/issue</b>	Why do people come to live in my home area and where do they come from?
<b>Aims</b>	<ul style="list-style-type: none"> <li>• to identify the different types of inward movement</li> <li>• to establish the nature of local pull-factors</li> <li>• to determine whether in-migrants of the same type tend to be found in the same areas</li> </ul>
<b>Data collection &amp; presentation</b>	<ul style="list-style-type: none"> <li>• sample questionnaire survey to establish (i) how long people have lived at current address (ii) the location of their previous address and (iii) reasons for moving</li> <li>• use of census data</li> <li>• mapping the distribution of different migrant types</li> <li>• diagrammatic analysis of questionnaire findings</li> </ul>

<b>Sub-unit 3B</b> <b>Urban environments</b>	
<b>Question/issue</b>	Should the suburbanisation of a village close to the rural-urban fringe be allowed to continue?
<b>Aims</b>	<ul style="list-style-type: none"> <li>• to identify recent changes in village buildings and morphology</li> <li>• to determine the effects of change on the socio-economic characteristics of residents</li> <li>• to consider the benefits and costs of allowing more suburbanisation</li> </ul>
<b>Data collection &amp; presentation</b>	<ul style="list-style-type: none"> <li>• prepare a base map from large-scale plans</li> <li>• classify village buildings by age, function and type</li> <li>• produce map overlays</li> <li>• local resident questionnaire</li> <li>• secondary data: development plans, newspaper articles, etc.</li> </ul>

<b>Sub-unit 4A</b> <b>Fragile environments</b>	
<b>Question/issue</b>	Population growth and its environmental impacts
<b>Aims</b>	<ul style="list-style-type: none"> <li>• to establish the scale of recent population growth in a selected area</li> <li>• to identify the specific environmental impacts of the growth</li> <li>• to determine what might be done to reduce the impacts</li> </ul>
<b>Data collection &amp; presentation</b>	<ul style="list-style-type: none"> <li>• use of census data</li> <li>• field observation of the evidence of population growth and its impacts on the environment</li> <li>• comparison of 'before' and 'after' maps /photographs</li> <li>• interviews with local officials about environmental concerns and possible remedial actions</li> </ul>

<b>Sub-unit 4B</b> <b>Globalisation</b>	
<b>Question/issue</b>	Globalisation and my home area.
<b>Aims</b>	<ul style="list-style-type: none"> <li>• to determine the evidence of globalisation in the local supermarket</li> <li>• to identify local enterprises with possible global links</li> <li>• to establish the nature of those links</li> </ul>
<b>Data collection &amp; presentation</b>	<ul style="list-style-type: none"> <li>• sample surveys of the origins of goods in a local supermarket</li> <li>• analysis of types of goods involved</li> <li>• interviews with local employers and producers (farms, factories and service providers)</li> <li>• mapping origins of goods and global links of local firms</li> </ul>

<b>Sub-unit 4C</b> <b>Human welfare</b>	
<b>Question/issue</b>	To what extent do <b>two</b> sample areas differ, in terms of human welfare?
<b>Aims</b>	<ul style="list-style-type: none"> <li>• to select and use at least three different measures</li> <li>• to establish the degree of difference</li> <li>• to identify the factors behind the difference</li> </ul>
<b>Data collection &amp; presentation</b>	<ul style="list-style-type: none"> <li>• sample field surveys of housing (size, condition), service provision and environmental quality</li> <li>• refer to census data about socio-economic class and household size</li> <li>• interviews with local government officials</li> <li>• questionnaire concerning local perceptions</li> </ul>

## Assessment of the coursework

Coursework is centre-assessed, using the criteria on pages 24 – 28 of the Specification, and externally moderated by London Examinations. A copy of the Individual Candidate Record Sheet (see *Appendix 1* of the Specification) should be completed for each candidate.

Centres are reminded that it is their responsibility to ensure that, where more than one teacher has marked the work, internal standardisation has been carried out. This procedure will ensure that the work of all candidates at the centre is marked to the same standards.

In assessing the coursework, the following criteria are to be applied.

Assessment criteria		Mark
1	Introduction and aims	5
2	Data collection	15
3	Data presentation	15
4	Analysis and conclusions	15
5	Planning and organisation	10
<b>Total marks</b>		<b>60</b>

## Assessment Criterion 1 – Introduction and Aims

(5 marks)

This section should

- introduce the broad purpose of the study
- refer to the specific questions/problems/hypotheses being investigated
- identify the location of the investigation.

<b>Level One</b>	An <b>outline</b> of the purpose of the study and/or some of the aims. There is sufficient detail for the reader to know what the study is about, and where it is located, however the question or issue is only briefly identified. The sequence of work is uncertain.	1 – 2
<b>Level Two</b>	A <b>clear statement</b> of the broad purpose of the study, its aims and location. The question or issue is made clear and the sequence of work is identified.	3 – 4
<b>Level Three</b>	The broad purpose of the study, its aims and location are given in some <b>detail</b> . Questions and issues are thoroughly identified and an effective sequence of investigation is established. (This is particularly important where the investigation is based on group work.)	5

## Assessment Criterion 2 – Data Collection

(15 marks)

This section should

- state the nature of the information/data required
- describe, explain and justify the methods used to collect the data
- show evidence of the data collected, in the form of tables, etc.
- pass comment on any problems encountered and what attempts were made to overcome them.

<b>Level One</b>	The data required and the methods used to collect and record it are <b>described</b> . At the top of this mark range it is quite clear from the description how the data was collected. If secondary data is used, there should be an indication of the origin of that data.	1 – 5
<b>Level Two</b>	In addition to description, there is some <b>explanation</b> of the methods used to collect and record the data. If secondary data is used, there is a comment on why that particular data was chosen and/or how it was obtained.	6 – 10
<b>Level Three</b>	This level is characterised by clear explanation of the methods used to collect and record the data, and there should be some <b>justification</b> of the methods. There may be justification of the data required, in addition to a statement. If secondary data is used, there is a comment on why that particular data was chosen and how it was obtained. Where relevant, there is some reference to any <b>limitations</b> of the data, and/or problems encountered in its collection.	11 – 15

## Assessment Criterion 3 – Data Presentation

(15 marks)

This section should

- select data for presentation which is relevant to the stated aims of the study
- select a variety and range of appropriate presentation techniques for this data and for the purpose of the enquiry. (The emphasis should be on ‘appropriate’ rather than variety for the sake of it. This criterion carries a high mark weighting and candidates should be encouraged to attempt techniques beyond basic graphs and tables, and consider whether techniques such as sketch-maps, density shading, annotated sketches/photographs, proportional symbols, composite and overlay diagrams, flow lines, isolines, etc. would be appropriate.)
- demonstrate the skills of the candidate, by using the presentational techniques chosen, neatly and accurately.

<b>Level One</b>	Uses a <b>limited range</b> of <b>basic</b> methods (e.g. bar charts) to present the data. At the lower end of this mark range, some of the required information (e.g., scales, keys) may be incomplete and skills of construction/presentation weak.	1 – 5
<b>Level Two</b>	Uses a <b>variety</b> of <b>appropriate</b> conventional methods to present the data. At the upper end of this mark range, diagrams should be neat and accurate, with titles, scales, keys etc in place.	6 – 10
<b>Level Three</b>	Accurately uses a <b>wide variety</b> of appropriate methods to present the data. The candidate may have attempted some original methods of presentation. There may be some <b>justification</b> of the methods chosen. The methods chosen present the data in a particularly <b>clear and effective</b> way.	11 – 15



## Assessment Criterion 4 – Analysis and Conclusions

(15 marks)

This section should

- describe what the data shows
- include analytical comments which relate the data to the original aim(s)
- identify, where appropriate, any links or relationships between different data sets
- where relevant, consider the values and attitudes of people involved
- return to the original aim(s), and consider to what extent the question has been answered, the problem solved or the hypothesis proved
- show an appreciation of the limitations of the study and suggest how it could be improved or taken further.

<b>Level One</b>	Makes statements <b>describing</b> the data. If relevant, there is some <b>awareness</b> of the different attitudes of some of the individuals and groups involved. There are some <b>general concluding comments</b> which have a link with the original aim(s).	1 – 5
<b>Level Two</b>	The data is <b>described in detail</b> , and at the upper end of this mark range there is some <b>genuinely analytical</b> comment. If relevant, some links/relationships between data sets, and/or the different attitudes of many of the individuals or groups involved, are <b>identified</b> . Concluding comments <b>derive from the data collected</b> , and there may be some awareness of the inherent <b>limitations</b> of the study and/or suggestions for taking the study further.	6 – 10
<b>Level Three</b>	Data is <b>analysed</b> in detail, making links, where relevant, to <b>appropriate geographical theory</b> . If quantitative analysis is attempted, it is used accurately and appropriately. Identifies and <b>shows relevance</b> of any links/relationships between data sets and/or the attitudes and values of most of the parties involved. Draws sound conclusions, explicitly <b>supported by evidence</b> , clearly related to the objectives of the study. Shows an awareness that explanations may be <b>incomplete</b> , and suggests how the study could be improved/taken further.	11 – 15

## Assessment Criterion 5 – Planning and Organisation

(10 marks)

The candidate should

- organise and integrate material in a logical order which aids understanding
- demonstrate an ability to present relevant information in a form that suits its purpose, including the use of ICT where possible, e.g. pagination, contents, titles, headings, cross-referencing and bibliography
- ensure that the text is legible so that the meaning is clear.

<b>Level One</b>	The study includes some relevant items, but they have not been organised into a logical sequence. It may be incomplete and lack particular sections. There may be page numbers and a contents page and some titles and headings.	1 – 3
<b>Level Two</b>	The content is organised in a clear and logical way. Pagination and contents are likely to be complete. Appropriate use is made of titles, headings etc.	4 – 7
<b>Level Three</b>	The organisation of the study makes it easy to read and use. Diagrams are well integrated into the text, and appropriate use is made of sub-headings and cross-references.	8 -10

# Resources

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It is hoped that students will gain their knowledge and understanding and develop skills from using a variety of sources, such as atlases, topographic maps, newspapers, magazines, CD-ROMs, the Internet, videos, slides, field trips and so on.

## 1. Textbooks

### Particularly recommended

*Longman Geography for IGCSE* – O Phillipson and J Pallister (Longman 2005)  
ISBN: 140580209X

### Also recommended

- Beaumont, A et al – *World Geography* (Cambridge, 1997), ISBN 0 521 45697 5
- Bowen, A & Pallister, J – *GCSE Geography* (Heinemann, 2000), ISBN 0 435 35178 8
- Bowen, A & Pallister, J – *Tackling Geography Coursework* (Hodder & Stoughton, ISBN 0 340 68389 9
- Chapman, S et al – *Complete Geography* (Oxford, 1998), ISBN 0 19 913 3980
- Grimwade, K & Hart, G – *Skills base Geography* (Hodder & Stoughton, 1999), ISBN 0 340 67019 3
- Harcourt, M & Warren, S – *Tomorrow's Geography* (Hodder & Stoughton, 2001) ISBN 0 340 7996 5
- Hodern, R et al. – *Managing Issues in Geography* (Hodder & Stoughton, 2003), ISBN 0 340 8021 62
- Milner, S – *GCSE Geography Handbook* (Hodder & Stoughton, 1999), ISBN 0 340 72447 1
- Nagle, G – *Geography through Diagrams* (Oxford, 1998), ISBN 019 913 4022
- Raw, M & S – *Geography in Place – Books 1 & 2* (Collins, 1996 & 1997), ISBN 0 00 326692 3 & 3226693 1
- Waugh, D – *The New Wider World* (Nelson Thornes, 1998), ISBN 0 17 434 3140
- Waugh, D & Bushell, T – *Key Geography for GCSE - Books 1 & 2* (Nelson Thornes, 1998), ISBN 0 7487 3603 4 & 3649 2

## 2. Teacher's Resource Guides

- Beaumont, A et al – *World Geography* (Cambridge, 1997), ISBN 0 521 45700 9
- Bowen, A & Pallister, J – *Understanding GCSE Geography* (Heinemann, 2000) ISBN 0 435 35179 6
- Sander, J & Pierce, A – *The New Wider World* (Nelson Thornes, 1998), ISBN 0 17 434319 3
- Smith, J & Gardner, D – *New Key Geography for GCSE* (Nelson Thornes, 2002), ISBN 0 7847 6746 0

### 3. Websites

Below is a list of websites that may be useful for this specification. The list represents a fraction of the sites available.

Actionaid – [www.actionaid.org](http://www.actionaid.org)  
BBC news – [www.news.bbc.co.uk](http://www.news.bbc.co.uk)  
Brazilian Embassy – [www.brazil.org.uk](http://www.brazil.org.uk)  
Development Education Project – [www.dep.org.uk](http://www.dep.org.uk)  
Geoactive – [www.nelsonthornes.com](http://www.nelsonthornes.com)  
Geographical Association – [www.geography.org.uk](http://www.geography.org.uk)  
Greenpeace – [www.greenpeace.org](http://www.greenpeace.org)  
Meteorological Office – [www.metoffice.gov.uk](http://www.metoffice.gov.uk)  
National Centre for Atmospheric Research – [www.ucar.edu/image](http://www.ucar.edu/image) library  
Ordnance Survey – [www.ordnancesurvey.gov.uk](http://www.ordnancesurvey.gov.uk)  
Oxfam – [www.oxfam.org.uk](http://www.oxfam.org.uk)  
Tourism data – [www.gn.apc.org/tourismconcern](http://www.gn.apc.org/tourismconcern)  
UK Census – [www.census.ac.uk](http://www.census.ac.uk)  
UN Environment Programme – [www.unep.ch](http://www.unep.ch)  
US Census Bureau – [www.census.gov](http://www.census.gov)  
US National Hurricane Centre – [www.nhc.noaa.gov](http://www.nhc.noaa.gov)  
Volcano World – [www.volcano.und.nodak.edu](http://www.volcano.und.nodak.edu)  
World population data – [www.overpopulation.org](http://www.overpopulation.org)  
World statistics database – [www.odci.gov/cia/publications/factbook](http://www.odci.gov/cia/publications/factbook)

### 4. CD-ROMs and video tapes / DVDs

BBC – various. Contact [www.bbc.co.uk](http://www.bbc.co.uk)  
Channel 4 – various. Contact Channel 4 School Publications  
Microsoft – *Encarta 2000*  
Nelson Thornes - *The Physical World*  
Nelson Thornes - *Weather World*

### 5. Others

*GCSE Geography: the Revision Guide* (Coordination Group Publ.), ISBN 184 146700 6  
*Geo Factsheets & GCSE Questionbank* (Curriculum Press)  
*Wideworld* (GCSE magazine) (Philip Allen Publ.)

# Support and training

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## Training

A programme of INSET courses covering various aspects of the specifications and assessment will be arranged by London Examinations on a regular basis. Full details may be obtained from

International Customer Relations Unit  
Edexcel International  
190 High Holborn  
London  
WC1V 7BE  
United Kingdom

Tel: +44 (0) 190 884 7750

E-mail: [international@edexcel.org.uk](mailto:international@edexcel.org.uk)

## Edexcel publications

Support materials and further copies of this specification can be obtained from

Edexcel Publications  
Adamsway  
Mansfield  
Notts NG18 4LN  
UK

Tel: +44 (0) 1623 450 781

Fax: +44 (0) 1623 450 481

E-mail: [intpublications@linneydirect.com](mailto:intpublications@linneydirect.com)

Other materials available in 2003 include

- Specimen papers and mark schemes (Publication code: UG013057)
- Specification (Publication code: UG013068)

# Appendices

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## Appendix 1 – Using ICT in Geography

The aim of this section is to consider the use of information communication technology (ICT) in this Geography specification. It is not intended to be viewed as a definitive guide describing every possible opportunity for the introduction of ICT in the specification, but its purpose is to outline the specification requirements for which ICT can be used, and offer teachers a few ideas worthy of further exploration and development. A brief guide to resources and further reading is also provided at the end of the section.

### What is information communication technology?

Traditionally, the term 'Information Communication Technology' has become synonymous with computers. Although computers are very powerful tools for accessing, storing and manipulating data, the scope of ICT extends much further than that. Basically, ICT encompasses any form of information handling, storage, processing or transmission by electronic means. The key term is 'electronic means', because in addition to computers other devices such as fax and television, the short message service on mobile phones (SMS) and digital photography all constitute ICT. This definition might be particularly reassuring to centres that have limited access to traditional computing facilities.

### Why incorporate information communication technology in IGCSE Geography?

The major motivation for incorporating ICT into IGCSE Geography teaching schemes is educational, in that it is a very powerful teaching and learning tool. Through the use of ICT, students are able to develop skills that not only contribute to their development as geographers, but are also transferable across subjects and into the workplace.

- **ICT can be used within this specification to gain access to a wide range of geographical knowledge and information sources**

In the past, students have often used books, newspapers and magazines when researching geographical topics, but in recent years the 'Information Revolution' has greatly widened the scope of sources available.

Major newspapers are available in CD-ROM format, and the great advantage is that they can be searched at great speed on relevant topics such as floods, volcanic eruptions, global warming etc.

A range of commercially produced CD-ROMs are also available (examples of which are listed in the resources section), which provide a wealth of statistical and visual data, often with sound and moving images. These are particularly useful for topics such as rivers, coasts, weather and natural hazards.

The Internet is also an invaluable source of geographical information and a list of useful sites, relevant to this specification, are listed. When using Internet-based sources, students should be encouraged to interpret information with caution and be able to detect any forms of bias or individual perspectives.

E-mail enables first hand contacts to be made with other localities. Some good links have been set up between students in different countries. Similarly, many technical Internet sites such as Volcano World or the US Geological Survey have a 'write to an expert' facility, where students can mail questions and receive replies. The potential of e-mail as a geographical resource is explored further by Burn (1999) in a journal article, listed below.

- **To deepen students' understanding of environmental and spatial relationships**

ICT can provide an added dimension to learning that would otherwise be unavailable to students. This is through the use of commercially available modelling packages which enable 'What If?' questions to be asked. Perhaps the drainage basin is the best example of this. Students can vary the amounts of rainfall, previous weather conditions etc and examine the effects on river flow. Similarly, the effects of deforestation in the river catchment can be simulated. Another use of modelling includes examining the impact of changing birth and death rates on population structures (Unit 4C).

- **To enable students to experience alternative images of people, place and environment**

A key feature of this specification is that it requires the geographical themes to be studied at a variety of scales from local to global. Whilst the local environment can be studied through fieldwork, global environments and distant places are more difficult to teach. In addition to video, which is a very powerful tool for teaching distant places, students can also access Internet sites with pictures, view live images from webcams and even interact by e-mail with people living in these localities.

- **To enhance skills of geographical enquiry**

Many of the geographical skills outlined on page 10 of the specification document can be developed through the use of ICT. These include

- selecting appropriate information from CD-ROM and Internet sources
- development of graphical and mapping skills by using computer based packages to generate maps, charts and tables. When producing these, important decisions have to be taken by the candidate on features such as scale, class intervals, axis labels and titles
- digital photography and scanning can assist in the production of visual images which can be integrated into text reports.

Many atlases are now produced in a computerised format, either available on disk or CD-ROM. These are one of the most valuable tools for use in IGCSE Geography. They can be used in exactly the same way as a printed atlas but have the added advantage that students can select and display data on a range of geographical topics at a variety of scales from global to regional. Thematic maps of individual countries are available, with statistics on imports, exports,

trade and population pyramids etc. Although many uses of such a resource soon become apparent, a good example of their use can be seen with reference to that part of Units 3A and 4C which relate to population changes over time and space. Population structures can be compared between MEDCs and LEDCs and also spatial variations in quality of life can be mapped. Traditionally, students have spent many hours drawing and colouring choropleth maps of various demographic features such as life expectancy and the impact of medical and economic factors, without any clear patterns emerging. Using a computerised atlas, these can be created in a matter of seconds, group categories changed or combined and the map re-drawn.

- **To consider the wider impact of ICT on people place and environment**

Throughout the specification, opportunities exist to make students aware of how ICT is used in an applied capacity. Examples of such uses include flood prediction and prevention via computerised early warning systems, modelling of population structures to plan future service provision such as increased education facilities following a 'baby boom', or appropriate healthcare services for an ageing population. Simulation models are used by industry to search for locations that will maximise profits; and in meteorology, ICT and satellite images are an integral part of producing both long and short-term forecasts.

- **ICT and coursework**

The coursework element of the specification, and its component geographical enquiries, offer endless opportunities for the integration of information communication technology. ICT can be used, both in a controlled manner by the teacher when setting up the enquiry and at an individual level by the candidates when analysing and presenting data and producing their final reports.

### **Data collection (Criterion 2) (see page 25 of the specification)**

#### Secondary sources

Although the geographical enquiry should involve the candidate in a direct fieldwork experience, secondary sources are useful for theoretical background work or to enable comparisons to be made, either over time or with different locations. Possible uses of information communication technology for secondary sources, include obtaining maps and background statistics for the locational setting of the study, from the Internet, CD-ROM or computerised atlas. Background theoretical information can be accessed from the Internet and CD-ROMs in a similar way to using books and magazines. The advantage of using ICT is that more up-to-date information is usually available and it can be accessed relatively quickly. Credit can be given for selecting appropriate information and evaluating its usefulness.

Data can be made available in database or spreadsheet format from previous years' fieldwork, so that changes can be investigated over time. This is particularly useful in the case of weather statistics, traffic surveys, land-use and shopping patterns.

Live webcams are available and can be easily accessed via the Internet. Some good GCSE studies in previous years have used these to study shopping in modern retailing centres or tourist resorts around the world. Certainly comparisons can be made with local studies.



## Primary sources

Often data for the geographical enquiry is collected by the whole IGCSE group, on a designated day in the field. Collation of the results, in paper format from volumes of questionnaires and field measurements, can be an onerous task. Databases and spreadsheets can be set up for students to enter their individual results. A complete set of results can then be issued, or students can search and interrogate the database for information relevant to their enquiry. This information can be summarised in tabular form for inclusion in the final report.

Sometimes, it is appropriate to use ICT directly in the data collection process. Possible uses include the continuous logging of weather data or river discharge. Similarly, portable computers have been successfully used in the field by students to record results directly, rather than using traditional written formats.

Digital cameras can be used to capture images. These can be stored on the computer in a library format for selection and use by the students in their final report. In the field, students should be encouraged to use the technology to take pictures, but the skill to be rewarded is in selecting appropriate photographs and annotating their geographical features. The use of a school digital camera eliminates the need for students to take personal cameras on fieldwork and incur processing costs. A possible equity problem is therefore resolved, because all candidates can have equal access to the digital images.

## **Data presentation (Criterion 3) (see page 26 of the specification)**

Whatever the nature of their individual enquiries, students should be encouraged to use a full range of ICT based techniques (where appropriate and where possible) to assist in the presentation of data collected. Candidates could incorporate some of the following techniques

- computer graphics can be used to present data in the form of pie charts, line graphs, bar charts, choropleth maps etc. Usually in the process of producing these, candidates have also to demonstrate their geographical skills, by choosing the appropriate visual technique to present the data and make decisions regarding axes, scales and class intervals
- images taken using a digital camera can be included with their geographical features appropriately annotated. Although this technique would often replace the traditional field sketch, it must be remembered that there will be occasions where a hand-drawn field sketch will be more effective to highlight geographical features
- commercially produced software packages are available for plotting river channel cross-sections or beach profiles and urban transects from crude data collected in the field. Once again, however, it must be stressed that the candidates' understanding of the processes involved may be enhanced by attempting to draw at least one of the profiles by hand.

More able candidates may be able to employ simple geographical information systems for plotting census data etc.

### **Planning and organisation (Criterion 5) (see page 28 of the specification)**

Perhaps the most obvious use of ICT is in presenting and enhancing the quality of the final report. Word processing and desktop publishing can be used for this purpose. It had been suggested that if students type their text directly into a word processor rather than merely typing up a neat version of a rough text, the quality of their written expression will improve through the facility of constantly re-editing the work. ICT can also be successfully used to assist with pagination and the compilation of bibliographies.

## **Further support**

### **Training**

The Geographical Association, which is the subject association for geography teachers, publishes the journal '*Teaching Geography*' quarterly. This journal frequently contains articles and ideas for the use of ICT in geography teaching and also contains a software review page and many advertisements for new geographical computer software. The Geographical Association also organises an annual three-day conference during the Easter vacation. At the conference, workshops on various aspects of ICT are held and the large exhibition of geographical resources is the place to investigate and try out new computer software.

The Geographical Association can be contacted at  
160 Solly Street  
Sheffield  
S1 4BF

Telephone: +44 (0) 114 296 0088

Website: [www.geography.org.uk](http://www.geography.org.uk)

E-Mail: [ga@geography.org.uk](mailto:ga@geography.org.uk)

## ICT resources

Listed below are some typical computer resources for conducting types of work suggested in this section. Inclusion of a resource is not necessarily a recommendation of its quality or suitability for this specification.

Title: *Encarta 2000*  
Theme: Detailed Atlas, Photos, Video clips  
Format: CD-ROM  
Publisher: Microsoft

Title: *British Coastlines From the Air*  
Theme: Aerial Photos  
Format: CD-ROM  
Publisher: Anglia Multimedia

Title: *Earthshaping: Glaciers*  
Theme: Glaciation, Sound, Photos 3D  
Format: CD-ROM  
Publisher: Hampshire Microtechnology

Title: *Amazonia*  
Theme: Virtual Rainforest  
Format: CD-ROM  
Publisher: Channel 4 Schools

Title: *Coastal Erosion KS4*  
Theme: Coastal Erosion: Holderness  
Format: CD-ROM  
Publisher: CDI Educational

Title: *Agriculture and the Rural Environment*  
Theme: UK Farming Information/Stats  
Format: CD-ROM  
Publisher: Scottish Farm and Countryside Educational Trust

Title: *SCAMP*  
Theme: Census Data and Base Maps  
Format: CD-ROM  
Publisher: Pebbleshore Ltd

Title: *Atmosphere, Climate and Environment*  
Theme: UK related weather/Environment  
Format: CD-ROM  
Publisher: ARIC Unit, Manchester Metropolitan University

## Some useful websites for this specification

These sites and addresses are all correct and working at the time of writing. Internet sites do, however, change constantly with new sites appearing or existing sites changing their URL (address).

### General geography portal sites

These link to a variety of geography sites and resources and are a good starting place to be directed to Internet sites on all geographical topics.

[www.georesources.co.uk](http://www.georesources.co.uk)

[www.sln.org.uk/geography/](http://www.sln.org.uk/geography/)

[www.vtc.ngfl.gov.uk/resource/cits/geog/ideas.html](http://www.vtc.ngfl.gov.uk/resource/cits/geog/ideas.html)

[www.rgs.org](http://www.rgs.org)

[www.niss.ac.uk](http://www.niss.ac.uk)

[www.camcentral.com](http://www.camcentral.com) (good link to various live webcams)

## **Organisations**

[www.nationalgeographic.com](http://www.nationalgeographic.com)

[www.un.org](http://www.un.org) (United Nations)

[www.greenpeace.com](http://www.greenpeace.com) (environmental issues)

[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk) (good for flooding and coastal erosion)

[www.nfu.org.uk/education](http://www.nfu.org.uk/education) (good for farming case-studies)

## **Current affairs**

[www.telegraph.co.uk](http://www.telegraph.co.uk)

[www.guardian.co.uk](http://www.guardian.co.uk)

[www.teletext.co.uk](http://www.teletext.co.uk)

[www.bbc.co.uk/news](http://www.bbc.co.uk/news)

## **Mapping and census data**

[www.ordsvy.gov.uk](http://www.ordsvy.gov.uk) (Ordnance Survey)

[www.upmystreet.com](http://www.upmystreet.com) (good for comparisons between areas)

[www.streetmap.co.uk](http://www.streetmap.co.uk) (good for local maps for coursework but still limited postcode areas available)

[www.census.ac.uk](http://www.census.ac.uk) (UK Census Data)

[www.odci.gov/cia/publications/factbook](http://www.odci.gov/cia/publications/factbook) (Database of World Statistics)

## **Physical geography and natural hazards**

[www.volcano.und.nodak.edu](http://www.volcano.und.nodak.edu) (Volcano World: excellent site)

[www.irn.org](http://www.irn.org) (river issues by area, topical issues etc)

[www.globalwarming.org](http://www.globalwarming.org)

[www.eduweb.com/amazon.html](http://www.eduweb.com/amazon.html) (Amazon Interactive)

[www.nhc.noaa.gov](http://www.nhc.noaa.gov) (USA National Hurricane Centre)

## **Aspects of human geography**

[www.facingthefuture.org](http://www.facingthefuture.org) (issues of overpopulation)

[www.globalchange.org](http://www.globalchange.org) (global development issues)

[www.british-industry.co.uk](http://www.british-industry.co.uk)

[www.settlement.com](http://www.settlement.com)

[www.virtualtourist.com](http://www.virtualtourist.com)

[www.overpopulation.org](http://www.overpopulation.org)

[www.dep.org.uk](http://www.dep.org.uk)

### **Further reading**

Broad J – *Getting Started with GIS – Teaching Geography* (Volume 25, No 3) (July 2000)

Burn R – *e-Geography – Teaching Geography* (Volume 24, No 3) (July 1999)

Davis R and Harris M – *An Earthquake Enquiry Using The World Wide Web Teaching Geography* (Volume 25, No 3) (July 2000)

Hassell D – *Whole Class Computer Activities – Teaching Geography* (Volume 24, No 4) (October 1999)

Home P – *Geography and the Internet: Adding a Key Skills Dimension – Teaching Geography* (Volume 25, No 4) (October 2000)

Weedon P – *Using ICT to Enhance GCSE Geography Coursework – Teaching Geography* (Volume 25, No 4) (October 2000)

## Appendix 2 – A checklist for the coursework investigation

### Choosing and defining the investigation topic

- Is there a topic you particularly wish to investigate?
- Try to focus on **one** clear issue / question / hypothesis.
- Is the topic manageable? Remember the investigation should only be 2,000 words long.
- Devise one or two key enquiry questions.
- What information is required?
- Explain the geographical context of your investigation.
- Draw annotated maps of both the general location and the site of your investigation.
- Check that you have completed the relevant parts of the Investigation planning sheet (see page 18).

### Data collection and recording

- Make a list of all the information you will need.
- How much do you already have?
- What extra data do you need?
- Can this data be collected over a reasonable amount of time?
- Are you using two or three relevant data collection techniques?
- Will all the information be relevant and useful to your investigation?
- What forms of sampling will be used and do you understand why?
- Is your sample size big enough or do you need to collect some more data?
- What equipment was used?
- Research the secondary data.
- Construct a table summarising the methods you used to collect data.

### Data representation

- How are you going to represent your data?

Qualitative maps – land use and morphological maps

Quantitative maps – flow diagrams, proportional symbols, dot maps, choropleths, isopleths

Diagrams and graphs – histograms, pie charts, scatter graphs, line graphs, frequency curves, long and cross sections, field sketches and tables

Statistics and statistical tests

Annotated photographs.

## **Data analysis and explanation**

- Use a variety of data representation methods.
- Integrate your maps, diagrams and photographs in your written analysis by commenting on them.
- Avoid endless pie charts and bar graphs.
- Pinpoint trends or patterns that emerge in your analysis.
- Include good quality hand-drawn maps.
- Annotate photographs.
- Discuss, justify and explain any statistical tests.

## **Conclusion and evaluation**

- Return to the original purpose of the study that you stated in the introduction.
  - Consider the one or two enquiry questions
  - Consider the usefulness of your data
  - Be self-critical
  - Explore the wider implications of your work – regional or national
  - Have you used the secondary data that you researched earlier?
  - Make use of relevant models or geographical theories.

## Appendix 3 – Glossary

This Glossary covers some 200 terms. The list is by no means exhaustive. It contains terms used in setting out the essential content of the four units, plus others encountered in many recommended textbooks. It is hoped that candidates will be made familiar with, and gain some understanding of these terms.

Words in **bold** within each entry are covered elsewhere in the Glossary.

**abstraction** Removal of water from rivers, lakes or **groundwater**, for human use.

**accessibility** The ease with which people can get to a particular place.

**affluence** The general level of prosperity enjoyed by a population.

**agro-forestry** Combining agriculture and forestry, as in the planting of windbreaks in areas suffering from wind erosion or growing trees for fuel.

**aid** Help provided by more wealthy nations (**MEDCs**) to less well off nations (**LEDCs**), mainly to encourage **development**.

**alternative energy** A term for **energy resources**, such as solar, tidal and wind power, that are **renewable** and offer an alternative to **fossil fuels**.

**amenity** A feature of the environment that is thought of as being pleasant, attractive or beneficial (e.g. fine scenery, open space).

**appropriate technology** Know-how and equipment, provided as part of **aid** programmes, that are suited to the basic conditions prevailing in the receiving country.

**aquifer** A permeable rock, such as limestone, which is capable of holding and transmitting **groundwater**.

**arable farming** A type of agriculture in which the emphasis is on the growing of crops.

**atmosphere** The mixture of gases, predominantly nitrogen, oxygen, argon, carbon dioxide and water vapour, that surrounds the Earth.

**attrition** The process whereby the **load** carried by rivers, winds and waves is reduced in size and becomes more rounded.

**bar graph** A diagram made up of bars that are drawn proportional in length to the quantities they represent.

**base flow** That part of a river's discharge fed by **groundwater**.

**base-level** The lowest level to which a stream or river can erode its valley.

**biodiversity** The variety of species in an ecosystem.

**biomass** The total amount of living material found in a given area.

**biome** A world-scale ecosystem usually defined by the dominant vegetation, e.g. the tropical rain forest.

**brownfield site** Land that has been used, abandoned and now awaits some new use. Commonly found in urban areas, particularly in the **inner city**.

**built-up area** The man-made landscape of a town or city with its buildings, transport networks and urban land uses.



**capacity** (of a stream) The **load** of a river at a particular time or location.

**carnivores** Animals or plants that eat animals.

**central business district (CBD)** The central area of a town or city dominated by department stores, specialist shops, restaurants, cinemas, theatres and hotels.

**channel** The part of a valley floor occupied by the flowing water of a stream or river.

**channelisation** The straightening, deepening, widening or lining of a river's course, mainly to reduce the risk of flooding.

**chemical weathering** The decomposition of rocks and minerals *in situ* by chemical reactions.

**choropleth map** A map that shows spatial information by means of a scheme of shadings (or colours) that represent different degrees of density, e.g. of population.

**collision margin** The **plate boundary** between converging **tectonic plates**.

**commuter** A person travelling daily to and from a place of work located some distance from their home.

**confluence** The meeting of a river and its **tributary**.

**conservation** The protection of such things as wild animals and plants, their habitats, fine scenery, historic buildings, etc. This is because of a growing awareness of their **amenity** and value, and often because they are scarce or threatened.

**conservative margin** A plate boundary where two plates are moving parallel to it but in opposite directions.

**convictional rainfall** Rain caused by the condensation of moisture.

**corrasion** Physical erosion caused by rock hitting rock, as for example when the **load** carried by a river strikes the bed and banks as it is transported.

**core** The name given to the interior of the Earth.

**corrosion** The chemical erosion (**solution**) of rock, such as limestone, by flowing water.

**crater** A rounded, funnel-shaped hollow, usually at the top of a **volcano**, through which lava and ash have been ejected.

**cross-section** 1) the profile revealed when a section is taken through a feature, such as across a valley. 2) a 'snapshot' or typical sample of society at a moment in time.

**crude birth rate** The number of births in a year per 1000 of the total population.

**crude death rate** The number of deaths in a year per 1000 of the total population.

**crust** The outer shell of the Earth, including the continents and the ocean floor.

**counter-urbanisation** The movement of people and activities away from large cities to small towns, villages or the countryside.

**cycle of deprivation** A sequence of events experienced by disadvantaged people and areas, in which one problem leads to another and so makes this worse.

**cyclone** An area of low pressure with winds moving in a spiral around the central point (also referred to as a **depression**).

**decentralisation** The movement of people, shops, offices and factories away from city centres and the **inner city** towards suburban and edge-of-city locations.

**delta** A low-lying area found at the mouth of a river and formed of material deposited by the river.

**deforestation** The felling and clearance of forested land.

**demographic transition** A model which shows how **crude birth** and **death rates** change over time, and therefore so too the rate of **natural increase** in a population.

**dependency ratio** The number of children (aged under 15) and old people (aged 65 and over) related to the number of adults of working age (between 15 and 64).

**deprivation** The degree to which an individual or an area is deprived of services, decent housing, adequate income and local employment.

**desertification** The spread of desert-like conditions into semi-arid areas.

**destructive margin** A **plate boundary** formed where two plates meet head on and one plate is forced below the other.

**development** The progress of a country in terms of economic growth, the use of technology and human welfare.

**development gap** The difference in standards of living and **well-being** between the world's richest and poorest countries (between **MEDCs** and **LEDCs**, between the **First World** and the **Third World**).

**discharge** The quantity of water that passes a given point on the bank of a stream or river within a given period of time.

**dot map** A map showing the distribution of something (e.g. volcanoes, people) by the location of dots of uniform size.

**drainage basin** The area drained by a river and its tributaries, bounded by a **watershed**.

**drought** A long, continuous period of dry weather.

**earthquake** A sudden or violent movement within the Earth's **crust** followed by a series of shocks.

**ecology** The science which investigates the relationships of living organisms to each other and to their environment.

**economic sector** A major division of an economy. Most commonly four sectors are recognised: primary (agriculture, fishing, mining), secondary (manufacturing), tertiary (services) and quaternary (R & D, information processing).

**ecosystem** An organic community of plants and animals interacting with their environment.

**ecotourism** A form of tourism which aims to conserve fragile ecosystems and ensure that its benefits (jobs, income) are retained within the local area.

**energy resources** The means of providing motive force, heat or light. They include electricity, gas, steam and nuclear power, together with fuels such as coal, oil and wood.

**epicentre** The point on the Earth's surface which is directly above the **focus** of an **earthquake**.

**erosion** The wearing down of the land by water, ice, wind and gravity.

**ethnic group** A group of people sharing the same characteristics of race, nationality, language or religion.

**evaporation** The changing of a liquid into vapour or gas at a temperature below its boiling point.

**evapotranspiration** The transfer of water to the **atmosphere** by evaporation and plant transpiration.

**exports** Items transported out of a country for sale abroad as part of its **trade**.

**eye of storm** The calm area at the centre of a **tropical cyclone** (hurricane, typhoon).

**First World** This comprises the industrialised countries (**MEDCs**) of North America, W. Europe, Japan, Australia and New Zealand.

**flagship project** A scheme aimed at improving the image and prestige of an area, for example, the London Docklands project.

**flood plain** That part of a valley floor over which a river spreads during seasonal floods.

**focus** The point of origin of an **earthquake**.

**fold mountains** A range of mountains formed by the crumpling of the Earth's crust, as at a **destructive margin**.

**food chain** A sequence in which organisms serve as the food for the next in the chain, as grass does for **herbivores**, and herbivores do for **carnivores** and humans.

**footloose industry** An economic activity whose location is not controlled by any particular factor, such as raw materials, labour or markets.

**forced migration** A movement of people caused by a **push factor** such as religious persecution or famine.

**foreign investment** Undertaken by companies to extend their business interests overseas. It might involve creating a new source of raw materials (e.g. a mine), setting up a branch factory, opening new retail outlets or buying shares in a foreign company.

**fossil fuel** Combustible materials made from the fossilised remains of plants and animals, e.g. peat, coal, oil and natural gas.

**free trade** When trade between countries is not restricted by **quotas**, **tariffs** or the boundaries of **trade blocs**.

**genetically modified (GM) food** Food coming from crops and livestock that have been genetically engineered to improve productivity and disease-resistance. The scientific techniques include either transferring genes from one organism to another, or changing genetic materials within an organism.

**ghetto** Part of a town or city containing a high proportion of one particular **ethnic group**.

**global warming** A slow but significant rise in the Earth's temperature. It may be caused by the build up of excessive amounts of carbon dioxide in the atmosphere which increase the **greenhouse effect**.

**green belt** A mainly rural area around a city in which development is strictly controlled to prevent the further outward spread of the **built-up area** and two neighbouring towns from coalescing.

**greenfield site** A plot of land in a rural area that has not yet been subject to any development.

**greenhouse effect** The warming of the Earth's atmosphere because pollution is preventing heat from escaping into space.

**gross national product (GNP)** The total value of goods and services produced by a country during a year. When expressed as per head of population (per capita), it provides a widely used measure of national prosperity and development.

**groundwater** Water held below the **water table** in **aquifers**.

**hazard** A natural event (e.g. earthquake, flood, landslide, volcanic eruption) that threatens or causes damage, destruction and death.

**heavy industry** An industry involving large quantities of materials, such steel-making, shipbuilding and petrochemicals.

**herbivore** An animal that obtains most its food from eating plants.

**high-tech industry** Manufacturing involving advanced technology, such as the making of microchips and computers. It also includes genetic engineering, communications and information technology.

**honeypot** A place of particular appeal and interest that attracts large numbers of visitors.

**human development index (HDI)** Used a measure of **development** in a country and for making international comparisons.

**hurricane** The name given to very powerful **tropical cyclones** in the Americas.

**hydraulic action** The force exerted by moving water on the bed and bank of a **channel**.

**hydrograph** A graph on which variations in a river's discharge are plotted against time.

**hydrological cycle** The unending movement of water between land, sea and atmosphere.

**impermeable** Rocks that do not allow water to pass through them.

**imports** Goods and services brought into a country from another as part of **trade**.

**infiltration** The movement of water from rain or melting snow into the ground.

**infant mortality** The average number of deaths of infants under 1 year of age, per 1000 live births, per year.

**informal sector** This is largely made up of jobs over which there is little or no official control. It includes jobs such as child-minding, domestic cleaning and bar-tending.

**inner city** That part of the **built-up area** and close to the **CBD**, often characterised by old housing, poor services and **brownfield sites**.

**interdependence** The drawing together of the countries of the world by the processes of **globalisation**.

**interlocking spurs** A series of ridges projecting out on alternate sides of a valley and around which a river winds its course.

**intermediate technology** The simple, easily learned and maintained technology used in a range of economic activities serving local needs in LEDCs.

**irrigation** The supply of water to the land by means of channels, streams and sprinklers in order to permit the growth of crops in dry areas.

**isopleth** A line drawn on a map joining points of equal value, as on a contour map or a weather chart, showing atmospheric pressure.

**lava** Molten rock from the Earth's interior that pours out on the surface as a result of volcanic activity.

**LEDC** An abbreviation for 'less economically developed country'. One of a number of terms (along with 'developing country') used when referring to the countries of the **Third World**.

**levee** A bank of sediment formed along the edge of a river **channel** deposited by floodwater.

**life expectancy** The average number of years a person might be expected to live.

**light industry** The manufacture of products that are light in bulk and use small amounts of raw materials.

**line graph** Used to plot the relationship between two variables, as between population and time.

**load** The materials transported by a stream or river in **solution**, in **suspension** and by **saltation** and **traction**.

**malnutrition** Ill-health resulting from a diet that is inadequate in terms of either quantity or vital minerals and vitamins.

**mantle** A thick layer of rocks lying between the Earth's crust and its molten **core**.

**mass-movement** The movement of weathered rock downslope without the direct action of running water.

**meander** A pronounced bend in a river.

**MEDC** An abbreviation for 'more economically developed country'. One of a number of terms (along with 'developed country') used when referring to the countries of the **First World**.

**migration** The permanent or semi-permanent movement of people from one location to another.

**million city** A city with a population exceeding 1 million.

**mixed farming** A type of commercial agriculture concerned with the production of crops and the rearing of livestock on one farm.

**natural increase** A growth in population produced when the **crude birth rate** exceeds the **crude death rate**.

**natural resource** Anything that occurs in a natural state and that is useful to people.

**newly industrialising country (NIC)** A term used to describe certain countries (mainly in SE Asia) which over the last 30 years have shown high rates of economic development.

**non-renewable resource** A material that cannot be restored after use. Examples include **fossil fuels** and minerals.

**out-of-town shopping centre** A large retailing complex located at or just beyond the edge of the **built-up area**.

**overgrazing** Putting too many animals on grazing land so that the vegetation cover is gradually destroyed.

**overland flow** The movement of precipitation, particularly rain and melt-water, over the ground; a part of **runoff**.

**overpopulation** Too many living in an area for it to support.

**pastoral farming** A type of agriculture concerned mainly with the rearing of livestock, for meat, milk, wool or hides.

**peak flow** The maximum **discharge** of a river after heavy **precipitation**.

**percolation** The process by which water seeps downward through rock.

**permeable** The quality of rocks and deposits that allows water to pass through them.

**pie graph (chart, diagram)** A diagram in which a circle is divided into sectors. The circle represents the total values; the sectors are proportional to each value expressed as a percentage of the total.

**plate boundary** The line separating two adjacent **tectonic plates**.

**pollution** A condition when environments (particularly air and water) become adverse to the normal existence of living organisms. Sources of pollution range from sewage outflows and agricultural fertilizers to factory chimneys and motor vehicle exhausts.

**porous** The ability of rocks and deposits to hold water.

**precipitation** The deposition of moisture on the Earth's surface, in the form of dew, frost, rain, hail, sleet or snow.

**pull factor** Something that attracts a migrant to a new location (e.g. freedom, a better job).

**push factor** Something in the home area that forces or persuades a migrant to move away (e.g. persecution, poverty).

**quality of life** Difficult to define, but it is often thought of as an umbrella term that takes into account **standard of living**, **welfare** and **well-being**.

**quota** A limit imposed on the quantity of goods produced, purchased or sold, as often applies in international **trade**.

**redevelopment** When applied to the **built-up area**, it means demolishing all existing buildings and starting afresh.

**refugee** A person who flees their country to avoid war, the threat of death, oppression or persecution.

**renewable resource** A resource which is not diminished when it is used; it recurs and cannot be exhausted (e.g. wind and tidal energy).

**resource** Something which meets the needs of people.

**Richter scale** A scale, ranging from 0 to 10, used in measuring the magnitude of **earthquakes**.

**rising limb** The part of a flood hydrograph that shows how quickly flood waters rise.

**risk assessment** Judging the amount of damage an area might expect from any given **hazard**.

**runoff** The amount of water leaving a drainage basin; it includes **overland flow**, **throughflow** and **groundwater** flow.

**rural-urban fringe** A zone of transition between the edge of the **built-up area** and the surrounding countryside.

**rural-urban migration** The movement of people from the countryside into towns and cities; an important part of **urbanisation**.

**saltation** A process of river transport by which small particles jump along the channel floor.

**scale** The relationship between a distance on a map or plan and the corresponding distance on the ground.

**scatter graph** A graphical way of representing data to see if two sets of measurement may be associated with each other.

**seismograph** An instrument used for measuring the occurrence and magnitude of an **earthquake's** shock waves.

**shanty town** An area of makeshift and unsanitary housing, often occupied by **squatters**, and found mainly in and around LEDC cities.

**socio-economic group** A group of people distinguished by employment, income and social characteristics such as education and family status.

**soil erosion** The removal of soil by wind and water and by the movement of soil downslope.

**solution** The process whereby rainwater, percolating groundwater and rivers dissolve rock minerals.

**squatter** Anyone who occupies a building or land without the legal right to do so.

**standard of living** The degree to which the needs and wants of a population are satisfied. This degree is one of the measures of **development**.

**stores** Places within a system where materials or energy are held for a time.

**streamflow** The flow of surface water in a well-defined **channel**.

**suburbs** The mainly residential parts of a town or city at or close to the edge of the built-up area.

**suspension** The process whereby small particles are carried along in the body of a stream or river.

**sustainable development** A form of **development** involving a wise use of **resources** and **appropriate technology** without badly damaging the environment. It meets the needs of today without preventing future generations from meeting theirs.

**tariff** A duty or tax charged by a country on its **imports** from other countries; a customs duty.

**tectonic plate** A rigid segment of the Earth's crust which can 'float' across the heavier, semi-molten rock below. Continental plates are less dense, but thicker than oceanic plates.

**Third World** A term used rather loosely (along with 'developing country' and **LEDC**) to denote the relatively poor and less-developed countries located mainly in Africa, Asia and Latin America.

**throughflow** The movement of water through rock and soil by **percolation**.

**traction** The transport of **load** along the bed of a river **channel** by rolling and sliding.

**trade** The buying and selling of goods and services between countries.

**trade bloc** A group of countries bound together by free trade agreements that exclude others.

**transnational company (TNC)** A huge enterprise which operates on a global scale and is involved in a wide variety of businesses.

**transpiration** The loss of water vapour from a plant.

**transport** 1) The movement of **load** by wind, water and ice. 2) moving people and commodities from one location to another.

**tributary** A river which flows into another, usually a larger one.

**tropical cyclone** A weather system of intense low pressure and violent winds formed over tropical seas. When they reach land their energy rapidly disappears, but not before causing considerable damage.

**typhoon** The name given to **tropical cyclones** in Asia.



**urban** Relating to, or characteristics of, a town or city.

**urban fringe** The outer edge of the **built-up area**.

**urban hierarchy** A grouping of the towns and cities of an area according any one of a number of criteria, including population size and the services they provide.

**urban land use model** A simplified generalisation about the typical pattern of land use in a town or city. One model sees the pattern in terms of concentric zones, another in terms of sectors or wedges.

**urban renewal** The revival of old parts of the **built-up area** by either installing modern facilities in old buildings (known as 'improvement') or opting for **redevelopment**.

**urban sprawl** A haphazard and loose spreading of a built-up area.

**urbanisation** The process of becoming more urban, mainly through more and more people living in towns and cities.

**volcano** An opening in the Earth's crust out of which **lava**, ash and gases erupt.

**voluntary migration** This involves people who have chosen (not been forced) to move. Perhaps they have been persuaded to migrate by **pull factors** such as better housing or a higher paid job.

**water table** The level below which the ground is saturated.

**watershed** The dividing line between one **drainage basin** and another.

**weathering** The chemical alteration and physical breakdown of rock *in situ*.

**welfare** The general condition of a population in terms of diet, housing, healthcare, education, etc.

**well-being** Similar to **welfare**, but more about personal satisfaction, happiness and **quality of life**.

**wind farm** A cluster of wind-driven turbines generating electricity.

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