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Teacher Guide

**Cambridge International AS and A Level
Geography
9696**

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Introduction

The purpose of this teacher guide

This teacher guide is designed to help you familiarise yourself with the syllabus and support materials available and to help you organise and plan what you teach. It also offers advice and guidance on delivery, classroom practice and preparing your learners for their final assessment.

What do I need to get started?

When planning a course the teacher needs to become thoroughly familiar with the syllabus, (both the curriculum content and the assessment structure), the scheme of work and the support materials available.

The syllabus covers the overall aims, assessment objectives, curriculum content, descriptions of the examination components and grade descriptors of the subject. Each area or skill within a subject is defined to help you organise the overall scope of what needs to be learnt.

Extracts from the published schemes of work in the appendices of this guide illustrate one method of organising and delivering the course and include examples of appropriate teaching activities alongside the learning objectives. They also exemplify the planning principles outlined in Sections 2 and 3 of this guide. A fully comprehensive scheme of work covering the whole programme is available on Teacher Support at <http://teachers.cie.org.uk>

On Teacher Support you will find a range of other support materials for teachers; these include question papers, mark schemes and examiner reports. Making appropriate use of these resources can:

- help you understand how the teaching and learning relates to the assessment objectives
- help you prepare your learners for their final assessment
- help you understand the standard
- save you time.

Other support materials for teachers are available on the www.cie.org.uk. Make the most of these Cambridge resources by combining them with local activities and resources developed and provided by your school.

Here is a checklist to help you get started.

Checklist

- Have you read the syllabus and checked that it is for the correct year?
- Have you looked at our website? www.cie.org.uk
- What support materials are you going to use?
- What local resources are available to use?
- What school resources are available to use?

Section 1: Syllabus overview

The following sub-sections are taken from the Cambridge A Level Geography (9696) syllabus, reproduced here for convenience and to summarise the syllabus requirements.

1.1 Aims

The A Level Geography syllabus aims to:

- develop candidates' awareness of the relevance of geographical analysis to understanding and solving contemporary human and environmental problems;
- introduce candidates to the main elements of physical and human geography and the inter-relationships between these components;
- encourage understanding of the principal processes operating at different scales within physical and human geography;
- develop candidates' sense of relative location, including an appreciation of the complexity and variety of natural and human environments;
- demonstrate and explain the causes and effects of change over space and time on the natural and human environments;
- show the importance of scale in understanding Physical and Human Geography;
- make candidates aware of the problems of explanation (including data collection and processing) in physical and human geography, and give them an appreciation of the nature, value, limitations and importance of different approaches to analysis and explanation in geography.

1.1.1 Skills and attitudes

The aims are to:

- increase candidates' knowledge of, and ability to use and apply, appropriate skills and techniques relevant to greater understanding and interpretation of facts and relationships in Physical and Human Geography;
- encourage a concern for accuracy and objectivity in collecting, recording, processing, analysing, interpreting and reporting data in a spatial context;
- develop candidates' ability to handle and evaluate different types and sources of information;
- develop candidates' ability to think logically, and to present an ordered and coherent argument in a variety of ways;
- promote candidates' awareness of the need for understanding, respect and co-operation in conserving the environment and improving the quality of life both at a global scale and within the context of different cultural settings.

1.2 Assessment objectives

1.2.1 Knowledge

Candidates should be able to:

- give definitions and explanations of relevant geographical terms and concepts
- show working knowledge of relevant principles, theories and models
- recall accurately the location and character of chosen places and environments
- show knowledge of the physical and human processes at work.

1.2.2 Understanding and application

Candidates should be able to:

- understand the complex and interactive nature of physical and human environments
- understand how processes bring changes in systems, distributions and environments
- recognise the distinctiveness and the generality of places and environments
- recognise the significance of spatial scale and of time scale
- apply this geographical understanding to new contexts.

1.2.3 Skills and enquiry

Candidates should be able to:

- collect, record and interpret a variety of information from primary (fieldwork) sources and secondary sources (e.g. statistical data)
- interpret a range of map and diagram techniques displaying geographical information
- assess methods of enquiry and consider the limitations of evidence
- demonstrate skills of analysis and synthesis
- use geographical understanding to develop their own explanations and hypotheses.

1.2.4 Evaluation and decision-making

Candidates should be able to:

- assess the effects of geographical processes and change on physical and human environments
- consider the relative success or failure of initiatives and demonstrate a sense of judgement
- analyse the viewpoints of different groups of people and identify conflicts of interest
- assess the decision-making process in physical and human contexts
- recognise a number of possible outcomes from a given situation.

Below is a specification grid showing the weighting attached to these assessment objectives across each of the papers.

1.2.5 Specification Grid

The weighting given to these is:

Assessment objective	Paper 1 (%)	Papers 2 and 3 (%)	Advanced Subsidiary Level (%)	Advanced Level (%)
1 Knowledge	30	35	30	32.5
2 Understanding and application	30	35	30	32.5
3 Skills and enquiry	20	10	20	15
4 Evaluation and decision-making	20	20	20	20
TOTAL	100%	100%	100%	100%

1.3 The assessment structure

- Candidates for Advanced Subsidiary (AS) certification take Paper 1 only.
- Candidates who already have AS certification and wish to achieve the full Advanced Level qualification may carry their AS marks forward and take just Papers 2 and 3 in the exam session in which they require certification.
- Candidates taking the complete Advanced Level qualification take all three papers.

Paper 1	Core Geography	3 hours
Candidates answer questions in three sections. In Section A, they must answer five of six questions on the Physical and Human Core topics for a total of 50 marks. In each of Sections B and C, candidates answer one of three structured questions based on the Physical (Section B) and Human (Section C) Core topics, for a total of 25 marks in each section. See Description of components in this booklet for more details.		
100% of total marks at AS Level	50% of marks at A Level	

Paper 2	Advanced Physical Options	1 hour 30 minutes
Candidates answer two structured essay questions, each on a different optional topic, from a total of eight questions based on the Advanced Physical Options syllabus, for a total of 50 marks. See Description of components in this booklet for more details.		
25% of marks at A Level		
Paper 3	Advanced Human Options	1 hour 30 minutes
Candidates answer two structured essay questions, each on a different optional topic, from a total of eight questions based on the Advanced Human Options syllabus, for a total of 50 marks. See Description of components in this booklet for more details.		
25% of marks at A Level		

Papers 2 and 3 assess the Advanced Geography Options. These are separate 1½ hour exams, but will be timetabled for the same date and session. A short break (maximum 15 minutes) is allowed between Paper 2 and Paper 3.

There is some useful advice to Centres in Section 4.3 of the syllabus relating to the arrangements for Paper 2 and Paper 3.

This syllabus is examined in the May/June examination session and the October/November examination session.

1.4 Description of components

Paper 1

The paper is split into three sections, which assess the Physical and Human Core topics:

Physical Core

- Hydrology and fluvial geomorphology
- Atmosphere and weather
- Rocks and weathering

Human Core

- Population
- Migration
- Settlement dynamics

Section A consists of six questions based on the Physical and Human Core topics. Three questions are set on the Physical Core and three on the Human Core. Candidates must answer five of these six questions. In the Human Core, questions may be based either on a single topic or on a combination of topics. These questions make use of a variety of resources, including survey maps in some instances, and so are largely skills-based. All questions carry 10 marks. Although there are six core topics, this does not mean that there will always be one question set on each topic.

In **Section B**, candidates must answer one question based on the Physical Core topics. The section has three questions, one on each core topic.

In **Section C**, candidates must answer one question based on the Human Core topics. The section has three questions, either on a single topic or on a combination of topics.

In both Sections B and C, candidates have a choice from three questions. The questions are structured and give the opportunity for extended writing. Some questions involve the use of stimulus material. All questions carry 25 marks.

Papers 2 and 3

Paper 2 is set on the Advanced Physical Options. Candidates must answer two questions, **each on a different topic**. There are two questions on each topic:

- Tropical environments
- Coastal environments

- Hazardous environments
- Arid and semi-arid environments

Paper 3 is set on the Advanced Human Options. Candidates must answer two questions, **each on a different topic**. There are two questions on each topic:

- Production, location and change
- Environmental management
- Global interdependence
- Economic transition

In both papers, the questions are structured and may involve the interpretation of resources, as well as opportunities for extended writing. All questions carry 25 marks.

Section 2: Planning the course

2.1 Key things to consider when planning your course

This section of the guide considers planning over a number of time frames; planning for the long-term, medium-term and for individual lessons. Examples of planning are provided in the appendix and these templates are available for your use.

Planning the course involves three stages:

- **Long-term planning.** This is the first stage when you need to decide on the nature of the course you intend to offer your learners. This will set the overarching framework for the course whether it is one year or two years long. This allows you to map out the content and the time you will need to allocate to each topic.
- **Medium-term planning.** This is the second stage when you decide the order you are going to teach the course content in and write schemes of work. The scheme of work will include reference to assessment objectives, syllabus content, key terminology and provide some suggestions for learning activities and resources. It is also a useful place to indicate how and when you will deliver geographical skills.
- **Lesson planning.** This is the final stage when you decide how you will approach each lesson, what resources you have or will need and what learner activities are required to achieve your lesson objectives and outcomes

2.2 Long-term planning

Long-term planning usually takes place on an annual basis. The plan should provide a broad overview of the course for the year. You could consider how you will maintain the interest of the learners as well as ensuring progression through the syllabus content.

Long-term planning begins with some decisions:

1. Is it an AS course only or is it a full A Level course?
2. If it is a two year course leading to a full A Level, when will the exams be taken?
3. At A Level, which options are going to be delivered? This decision may vary from year to year based on factors such as the prior learning of learners, resource availability and teacher expertise.

You can begin by considering the following factors which will have some effect on the way the syllabus is planned and delivered in your school.

- Teaching time available over the two year delivery of the course. (Remember to allow for festivals, holidays, examinations, school trips and so on. You should also consider how many hours your learners will have available outside of the classroom.)
- Number and length of lessons per week
- Number of learners within the cohort

Section 2: Planning the course

- Number of learners per teaching group
- Whether groups are mixed ability or streamed by ability
- Scheduling of school-wide internal examinations

It is helpful to consider the recommendation that 360 guided learning hours are required for A Level and 180 for AS Level. Guided learning hours include direct teaching and other supervised or directed study time.

You may also wish to make provision for fieldwork activities in the long term plan which can provide invaluable experiences to consolidate learning, introduce case studies and deliver geographical skills.

Long-term planning should be used as a guide and will be adapted to suit the needs of learners. If there is more than one group, you will want to decide as a department whether or not the two groups follow the same long-term plan or whether it is adapted in any way to suit individual teacher expertise. For example, different teachers may choose to deliver different options at A Level. However, one thing to consider would be whether fieldwork would be taking place jointly or not as this may then affect the choice of options at A Level.

The example long-term plan below is based on two lessons of 80 minutes per week. The columns on the left-hand side indicate how the content of the course is broken down and spread across the available term time. The columns on the right-hand side offer a summary of the overall teaching hours covered each term. Please bear in mind that the duration of terms and lessons vary around the world and this is just one example.

Example long-term plan of the Human Geography Course for the AS

Term	Weeks	Topic	Topic area	Hours
1	1-3	Population	Increase & Change	8.0
	4-6	Population	Demographic Transition	8.0
	7-8	Population	Population & Resources	5.3
	9	Break	Break	
	10	Population	Population & Resources	2.7
	11-12	Population	Population Management	5.3
			Total time on Population	29.3
	13-14	Migration	Migration & Population Change	5.3

Term	Weeks	Topic	Topic area	Hours
2	15	Migration	Migration & Population Change	2.7
	16-17	Migration	Internal Migration	5.3
	18-19	Migration	International Migration	5.3
	20-21	Migration	Case studies	5.3
			Total time on Migration	24.0
	22	Break	Break	
	23-24	Settlement	Rural Settlements	5.3
	25-26	Settlement	Urbanisation	5.3
27-28	Settlement	Urban Change	5.3	

Term	Weeks	Topic	Topic area	Hours
3	29	Practice exam	Practice exam	
	30	Settlement	Urban Change	2.7
	31-32	Settlement	Urban Management	5.3
			Total time on Settlement	24.0
	33-34	Examination	Examination	
	35	Break	Break	
			Total time on Human Geography	77.3
	36-41	Begin A Level work		

Example long-term plan of the Physical Geography Course for the AS

Term	Weeks	Topic	Topic area	Hours	
1	1-3	Lithosphere	Tectonics	8.0	
	4-5	Lithosphere	Weathering	5.3	
	6-7	Lithosphere	Mass movements	5.3	
	8	Lithosphere	Slopes	2.7	
	9	Break	Break		
	10	Lithosphere	Slopes	2.7	
	11	Lithosphere	Human Impacts	2.7	
				Total time on Lithosphere	26.7
	12-14	Hydrosphere	Hydrological cycle	8.0	

Term	Weeks	Topic	Topic area	Hours	
2	15-16	Hydrosphere	Hydrographs	5.3	
	17-19	Hydrosphere	Processes & Features	8.0	
	20-21	Hydrosphere	Floods & Management	5.3	
				Total time on Hydrosphere	26.7
	22	Break	Break		
	23-25	Atmosphere	Energy budget	8.0	
	26-27	Atmosphere	Circulation	5.3	
	28	Atmosphere	Moisture	2.7	

Term	Weeks	Topic	Topic area	Hours	
3	29	Practice exam	Practice exam		
	30	Atmosphere	Moisture		
	31-32	Atmosphere	Human Effects		
				Total time on Atmosphere	24
	33	Examination	Examination		
	34	Examination	Examination		
	35	Break	Break		
				Total time on Physical Geography	77.3
	36-41	Begin A Level work			

Example long-term plan of the Human Geography Course for the A Level

Term	Weeks	Topic	Topic area	Hours
3	36-41	Degradation	Environmental Management	16
4	1-2	Degradation	Environmental Management	5.3
	3-8	Energy	Environmental Management	16
	9	Break		
	10-12		Environmental Management	8.0
	13-14	Tourism	Global Interdependence	5.3
5	15-21	Tourism	Global Interdependence	18.7
	22	Break		
	23-28	Trade	Global Interdependence	16
6				
	29-30	Trade	Global Interdependence	5.3
	31	Practice exam		
	32-34	Revision		
	35	Break		
	36-39	Examinations		

Topic	Total hours	Option Topic	Total hours
Degradation	21.3	Environmental Management	45.3
Energy	24		
Tourism	24	Global Interdependence	45.3
Trade	21.3		

Example long-term plan of the Physical Geography Course for the A Level

Term	Weeks	Topic	Topic area	Hours
3	34-38	Hazards	Hazardous Environments	13.3
4	1-8	Hazards	Hazardous Environments	21.3
		Break		
	10-12	Hazards	Hazardous Environments	5.3
	13-14	Coasts	Coastal Environments	5.3
5	15-21	Coasts	Coastal Environments	16
	22	Break		
	23-28	Coasts	Coastal Environments	16
6	29-30	Coasts	Coastal Environments	5.3
	31	Practice exam		
	32-34	Revision		
	35	Break		
	36-39	Examinations		

Topic	Total hours	Option Topic	Total hours
Hazards	40	Hazardous Environments	40
Coasts	43	Coastal Environments	43

2.3 Medium-term planning (Scheme of Work)

Medium-term planning adds detail to the long-term plan. A medium-term plan is a scheme of work which begins to break down the syllabus content and organise it into teaching units. Each teaching unit or scheme of work will focus on one part of the syllabus and will be allocated a certain number of lessons for delivery. The Cambridge scheme of work is available to download from www.cie.org.uk and an extract covering the Paper 1 Human Core Unit 1 Population is included on Page 18.

Here is a list of the kind of issues you need to consider when carrying out your medium-term planning

- timing and duration of the teaching unit
- syllabus reference
- learning objectives
- previous and future learning
- resources
- key vocabulary
- assessment opportunities including the use of past questions
- cross-curricular links including ICT
- key learning points to note
- suggested teaching and learning strategies

It is helpful for medium-term plans to have a title page or introductory comments. You will notice on the Cambridge exemplar scheme of work that there are three main headings used to introduce the scheme of work and some guidance about these is given below:

- **Recommended prior knowledge:** It is important to take account of prior knowledge from O Level or IGCSE Geography. For A Level schemes, the links would also be made to prior learning from the AS units of work. This will inform planning and give the teacher an indication of what learners should already know. For example, when starting Unit 1: Population at AS Level, learners should already be familiar with some of the basic key terms and concepts. Therefore, you should not need to spend as long teaching these and instead concentrate on the terms and concepts that are new to them. This section of the scheme of work also provides an opportunity to highlight any content that the teacher thinks should be delivered first in a unit of work. For example, the AS scheme of work for Hydrology and Fluvial Geomorphology advises the introduction of the hydrological cycle in the first or second lesson.
- **Context:** This will place the teaching unit in the context of other units within the syllabus. For example at AS Level, Unit 1: Population has close links with Unit 2: Migration and Unit 3: Settlement Growth, Pattern and Change. It is useful to highlight these links in your scheme of work not only for your own reference but also to make it explicit to learners how one part of Geography connects to another. For example, when teaching about rural to urban migration the connection with settlement hierarchies and the consequences of urban growth in LEDCs would be an obvious link to make. Such links also provide invaluable opportunities for a quick recap or revision of work already covered and also give the learners the all important 'big picture' by connecting to future learning. Sometimes, teachers may adopt a case study approach to teaching Geography where they use one example to deliver more than one part of the syllabus content.
- **Outline:** This gives a summary of the unit and provides the teacher with the opportunity to highlight key learning points. It is helpful here to note any case studies or specified exemplar material that is required by the syllabus. For example, in Unit 2 (AS Level) Migration, learners learn a case study of international migration and teachers have a free choice of which example to use. On the other hand, in Unit 1 (A Level) Tropical Environments, learners learn a case study of the problems of sustainable management of an ecosystem but these examples are specified – either a tropical rainforest or savannah ecosystem. **Further guidance about the use of case studies is given in Section 4.3.** You may also use this section to draw attention to the different scales that are needed for a unit or comment on common misconceptions.

Example scheme of work Paper 1 Human Core

Unit 1: Population**Recommended prior knowledge**

None is essential although some of the concepts will be familiar from Cambridge O Level/IGCSE® Geography.

Context

Population studies depend upon an understanding of population structure and the factors which contribute to its growth. There will be close connections with Units 2 and 3, as population change is often clearly related to migration and may impact on settlement growth, change and pattern.

Outline

The elements of growth are the starting point. However, the appreciation that movement is an integral aspect of growth and change is essential, so the second section focuses on migration as a discrete unit. Without the link between population and resources however, the study is merely academic, so an understanding of the final section is fundamental to this unit.

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
1.1 Natural increase as a component of population change	Population distribution and density Knowledge and understanding of natural increase and natural decrease of population and how this leads to	Distribution across an area Density of population Crude birth rate Crude death rate Fertility rate Mortality rate Natural increase	Distinguish between these two definitions. Essential to an understanding of overpopulation and underpopulation. They are fundamental to an understanding of spatial distributions. Global distribution showing densities is the ideal starting point. Aerial photos of people sitting on a beach can be a useful teaching aid – people are rarely evenly distributed. Also introduces choropleth maps as a technique. Could also show topological map of the data. TS Introduce basic terminology: birth rate, death rate, mortality rates, fertility rates and replacement level. Introduce the idea of overall population growth/decline through the equation.	Cambridge <i>International A and AS Level Geography</i> (Nagle and Guinness) Pages 87–92 Geofactsheet 175 Global

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
	<p>population change</p> <p>To understand replacement level to maintain populations</p>	<p>Population change</p> <p>Migration</p> <p>Replacement level</p>	<p>Pop change = Natural increase/decrease +/- migration</p> <p>Spatial distribution of population growth rates, i.e. global distribution. Look at statistics to compare growth rates for different countries and groups of countries, e.g. more economically developed countries (MEDCs) and less economically developed countries (LEDCs)</p> <p>A This could be an opportunity for learners to practise interpretation of choropleth maps.</p> <p>Explanation of birth rates and death rates. Emphasise the role of factors and the ways in which they may change over time</p> <p>Note: Gender is also an important part of the population change argument.</p> <p>Contrast population decline in Scandinavia and Continental Europe with rapid increase of population in some LEDCs.</p> <p>Structure of population</p> <p>TS Population pyramids</p> <p>Description – Compare two basic shapes: the wide based-steep sided, low, narrow topped pyramid of LEDCs and the wider based, straight sided, higher, wider topped pyramid of MEDCs.</p> <p>Could also consider rural and urban pyramids and regional variations e.g. South coast of England with an ageing population is narrow-based and relatively wide at the top. Annotate with explanation and discuss the characteristics showing higher pyramid = longer life expectancies.</p> <p>Consider a range of different age/sex pyramids which have particular characteristics, for instance illustrating the following factors: influence of wars, baby booms, HIV/AIDS, etc. e.g. France, UK, and countries in Africa.</p>	<p>Population Trends to 2050</p> <p>Population Bomb or Birth of Death?</p> <p>Table 1.2 Page 89</p> <p>Figure 1.6 Page 90</p> <p>Geofactsheet 562 Jan 2006</p> <p>Population US Update</p> <p>Section 1.1 Activities Page 89,91 and 93</p> <p>Past papers</p> <p>Nov 2011 Question 4(a) and (b)</p> <p>Nov 2010 Question 4(a) and (b)</p> <p>Cambridge International A and AS Level Geography (Nagle and Guinness) Pages 93-96</p> <p>Figure 1.12 Page 93 shows contrasting pyramid shapes.</p> <p>Figure 1.13 page 94 shows an annotated pyramid.</p> <p>Geofile 500 Sept 2005</p> <p>Demographic Change and Population Policy in India and China.</p> <p>The International Data Base of the US Census Bureau is an excellent resource.</p>
	<p>Factors that influence birth rate and death rate</p> <p>Economic, social environmental and political factors (a long list). Ideally they should be supported by facts, countries and data, to illustrate and exemplify</p>	<p>Age/sex pyramid</p> <p>Infant mortality rate</p> <p>Life expectancy</p> <p>Dependency ratio</p> <p>Age-specific birth rate/death rate</p> <p>Cohort</p>		
	<p>Knowledge and understanding of contrasting population structures</p>			

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
			<p>Also stage of technological development will link to the demographic transition model (DTM).</p> <p>Note: Remember to include migration as part of the reasoning.</p>	<p>www.census.gov/ipc/www/idb</p> <p>Geofactsheet Contemporary Population Issues: 3 Case Studies: China, Italy and India Section 1:1 Activities Page 95</p> <p>Past papers June 2010 Question 4(a) Nov 2010 Question 10(a) and (b)</p>
<p>1.2 Demographic transition</p>	<p>Historical growth of population</p>	<p>Demographic transition</p>	<p>Historical perspective – the demographic transition A model to show the stages in population growth over time.</p> <p>TS Annotated diagram can be the best way to approach the model.</p> <p>A Learners should draw it for themselves. It concentrates their minds and engages them directly with the material. Pyramids to illustrate each stage plus examples of countries in each stage. Emphasise the fact that it is a model and a simplification of reality. Application to contrasting countries, e.g. the UK and China.</p> <p>Consider the usefulness and limitations of the model. (This critical appraisal is important.) Take into consideration application to cities as well as countries and remember that the model does not have migration built in.</p> <ol style="list-style-type: none"> 1. Compare population pyramids for each stage of the model 2. Consider different methods of depicting the transition <p>Links to development should be considered throughout.</p>	<p><i>Cambridge International A and AS Level Geography</i> (Nagle and Guinness) Pages 96–104</p> <p>Section 1:2 Activities Page 98 and 100</p> <p>Figure 1.15 Page 96 shows Demographic Transition Model</p> <p>Past papers June 2010 Question 4(b) November 2010 Question 4(c) June 2009 Question 3</p>

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
1.3 Population-resource relationships	Appreciation of a debate between the pessimists and the optimists, or ecologists versus economists	<p>Ageing populations</p> <p>Carrying capacity Population ceiling Population boom and crash Famine Constraints, e.g. war, hazards</p> <p>Overpopulation Underpopulation Optimum population</p>	<p><i>Relationship to population change should be borne in mind throughout the teaching of this unit and mentioned frequently</i></p> <p>Stage 5 of the model. Discuss with reference to specific countries.</p> <p>This may be inserted wherever it is felt appropriate.</p> <p>TS and A Debater/discussion (deal on the subject of ageing populations. Suggested title: Ageing population: a blessing or a problem?</p> <p>Prediction of ageing populations Discussion about limited value of prediction</p> <p>Malthusian theory Using a series of diagrams: By increasing the population level it can be seen that resources are exceeded.</p> <p>Consider Paul Simon's view (economist and optimist) and that of Paul Ehrlich (environmentalist and pessimist) Lead into a discussion of consequences of rapid uncontrolled population increase. Limitations of the theory.</p> <p>Solutions</p> <ul style="list-style-type: none"> • Manage population growth • increase production—land under cultivation, yield per hectare <p>introduce Boserup's more optimistic model of changing technology</p> <p>Look at a graph of population in relation to GDP per person to ascertain concepts of over-, under- and optimum population</p>	<p>Case Study of Ageing Population in Japan Page 10</p> <p>Geofactsheet 196 – The Globalisation of Ageing</p> <p>Cambridge International A and AS Level Geography (Nagle and Guinness) Pages 105–113</p> <p>Section 1.3 Activities Pages 110, 111 and 113</p> <p>Figure 1.40 Page 112 compares views</p> <p>Past papers June 2008 Question 9 November 2009 Question 10</p>

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
	<p>To understand sustainability</p>	<p>Sustainability Carrying capacity Food shortage Subsistence farming</p> <p>Appropriate technology Intermediate technology</p> <p>Desertification Pollution Quality of life Green Revolution Ecological footprints</p>	<p>TS It is important that case study material is geared to the control of growth and the management of the results of change as stated in the syllabus. It is also important to understand that these are relative concepts, discovery of new resources/technology could relieve overpopulation whilst maintaining the same absolute numbers, but the quality of life would improve.</p> <p>Look at relationship between population growth and growth of food production. Compare arithmetic increase of food production with geometric increase of population (Malthus).</p> <p>Introduce idea of carrying capacity of land in relation to its population.</p>	<p>Case studies of Bangladesh – overpopulation and Canada – underpopulation.</p> <p>Use other local examples if more suitable.</p>
<p>1.4 The management of natural increase</p>	<p>A case study of any one country, may be an LEDC or an MEDC</p> <p>Appreciation of population change within chosen country</p> <p>Difficulties and management solutions</p>		<p>History of population growth and change Substantiate with population data Study population structure birth rate and death rate. Life expectancies. Analysis of change over time and discussion of reasons.</p> <p>Note: Death rate is a vital component of population change and is often forgotten by learners when discussing management/policies for controlling population growth i.e. managing natural increase</p> <p>Population policies e.g. China 'one child' policy, Singapore, Russia, Germany, UK, Italy or home country Consequences especially discussion of success and/or failure e.g. gender imbalance, ageing, rural/urban migration. The controls, the changes and then how the country has managed the changes.</p>	<p>Cambridge International A and AS Level Geography (Nagle and Guinness) Pages 114–118 gives a case study of China</p> <p>Section 1.4 Activities Page 118</p> <p>Past papers June 2009 Question 9(c) June 2008 Question 10</p>

2.4 Writing a scheme of work

General considerations

The Cambridge template provides guidance about the headings that can be used when writing a scheme of work.

Try to ensure there is a coherent flow through the lessons given the time available to you. For example if there are 12 weeks in each term, you could start by planning for a six-week period. Before planning a six-week period, check how many lessons there will be in that time.

Over time you may decide that you would like to change the order in which you cover the units. For example, you may discover that learners find some topics more difficult to grasp than others which might cause you to re-order your delivery. It may be worth noting however that some units build on knowledge from previous units and therefore must logically follow on from one another.

2.4.1 Breaking down the syllabus content

Broad headings. The first step in writing your scheme of work is to enter broad headings from the syllabus including a reference. This will allow you to check over time that all the necessary content has been covered. This broad heading is then broken down into objectives which are like a series of learning steps used to deliver the syllabus content. Look at the example given to see how a heading from the syllabus has been turned into learning objectives.

Key words are then highlighted in the scheme of work. It is essential that learners have a sound understanding of these key terms and are able to use them with confidence in their written work. In Geography there are often a lot of terms to remember and again, this can be quite confusing for learners. Giving them a list of words for each unit and asking them to build up a glossary of key terms as you teach the unit is a helpful strategy.

Teaching and learning strategies. A scheme of work also makes suggestions for teaching and learning strategies which the teacher can then adapt to suit the needs of their individual learners. This adaptation comes into the lesson planning stage. It is helpful to also include assessment opportunities within this section – for example, the use of a past question to assess learners' understanding of a topic. It is also helpful to highlight the key geographical skills that are being addressed which you may decide to show in bold. The syllabus provides information about the geographical skills that are required but it is also useful to look through the past questions to understand how skills are used as part of assessment e.g. a table with data for learners to compare or a proportional symbol map for learners to interpret. Some Geography schemes of work have a separate column for skills and also for assessment opportunities.

Key resources. Medium-term planning highlights key resources that support each section of the scheme of work. These resources include key textbooks, Geofile and Geofactsheet publications, website addresses and past paper references. You may also include video clips and Powerpoint presentations. There is advice on how to use these to create resources for individual lessons later in this guide.

Timings. Your long-term plan has already identified how long you have allowed for a unit of work. It is important to keep track of time so giving an indication of the duration for each sub section of a scheme of work can be invaluable for teachers particularly when teaching a syllabus for the first time.

Evaluation of your scheme of work. A scheme of work can be viewed very much as a working document. Many teachers find it helpful to annotate the scheme of work as they progress through a unit and then make revisions ready for teaching the following year. Such revisions may include:

- highlighting teaching and learning strategies that were particularly successful
- adding ideas gained from sharing good practice with colleagues
- updating resources
- adding up to date case studies
- changing a teaching and learning strategy in the light of learner assessment
- acting upon learner feedback about what learning strategies they enjoyed most
- adding new opportunities for fieldwork

It is also helpful to use examiner reports and mark schemes published each year to review and update medium-term plans. There is more on how to use these in Section 5 of this guide.

It may not be possible to cover everything in the time available. In this case, the teacher will want to set tasks outside the classroom – for example, researching and note taking on a topic to gain background knowledge. The time in the classroom can then be used for activities that require more teacher input.

A comprehensive scheme of work covering the full A Level Geography course is available on Teacher Support (<http://teachers.cie.org.uk>). Further excerpts from the published scheme of work can be found in the appendices of this guide.

Section 3: Planning the individual lessons

Each class and each learner will have their own particular needs and each teacher their own style, so you will want to plan individual lessons to suit your own learners.

To help you plan each lesson we have included a lesson planning template below and two completed sample lesson plans have also been included in the appendices by way of illustration.

You should plan all the lessons for a six-week period using the planning template. Then you can check across the lessons that the sequence is logical and that all previous learning has been covered at the appropriate time. Look at your scheme of work to help you to decide on the content of each individual lesson.

After each lesson you should reflect on how it went for the learners and for you. It is useful to make some notes on the lesson plan soon after the lesson so that you can feed your reflective feedback into future lessons. You may also need to adapt the next lesson if, for example, learners did not make expected progress against your learning objective. In this case, you would want to revisit it next lesson, perhaps as a starter activity, to ensure that you had secured the learning before moving on.

3.1 Key elements of the lesson plan

Below you will find an example lesson plan template which lays out a basic structure for you to follow.

- Dates, Time, Venue
- Teaching Group
- Lesson Objectives
- Learning Outcomes
- Context
- Resources
- Introduction
- Organisation
- Main Activities
- Plenary
- Homework
- Support
- Challenge/Extension/Personalisation
- Assessment Opportunities

You will need to consider any particular needs for setting up the classroom and any health and safety issues. You should remember that some activities may carry some risk and you should follow the school's risk-management policy before trying out these activities. This includes addressing any e-safety concerns when you use any ICT activities and any off-site fieldwork activities

GEOGRAPHY LESSON PLAN

Teacher's Name:

Subject:	Year Group / Set:	Date:	Time:	Venue:
Lesson Objectives			Learning Outcomes / Success Criteria	
Context (e.g. third lesson in a set of five)			Resources	
Introduction (including key questions)			Organisation (grouping etc)	
Main activities (including differentiation)				
Plenary			Homework	
Any targeted support	Challenge/Extension/ Personalisation		Assessment opportunities	

3.2 Objectives and outcomes

This is probably the most important part of the lesson plan as it sets out exactly what learners are expected to learn. The objective tells you what you want learners to know and understand by the end of the lesson. Objectives should be linked to the aims and objectives of the syllabus as outlined in your scheme of work.

It is best to consider the following:-

- Knowledge – what content is being delivered to the learners?
- Skills – which geographical skills will learners use in the lesson?
- Understanding – what will the learners actually have understood about a particular topic?

Once you have decided upon your objective for the lesson, you will then want to devise your learning outcomes – this is what you want learners to be able to do by the end of the lesson. It can be helpful to differentiate these in terms of ‘all, most and some’ to take account of the variety of abilities within your teaching group. It is also good practice to revisit the outcomes during the lesson and at the end of the lesson so that you and your learners can judge how much progress has been made against them and whether or not you are ready to move on to the next topic. There are assessment for learning strategies that will help you with this that are described later in this guide. Have a look at the lesson plan exemplars in the Appendix of this guide to see how a learning objective has been translated into learning outcomes.

3.3 Activities and active learning

3.3.1 Introduction

The lesson should start with an introduction which could either be starting a new topic or putting a particular area of the syllabus into the context of previous lessons. It will involve the key questions that the lesson is focusing on.

The lesson could start with a hook which is a strategy to engage learners and immerse them in the topic they are learning about from the minute the lesson begins. A good example might be to be playing a short video clip set to music about a particular topic as they enter the room. Alternatively, they might have a photo or cartoon to analyse and discuss.

A starter activity will then either introduce a new topic or make the link to previous learning. The idea of this is a short activity, often interactive, to engage learners in the lesson. For example, you could decide to do a quick card-sorting activity to recap key geographical terms and their definitions from the previous lesson. You could add stretch and challenge to this by leaving some cards blank for learners to complete their own definitions or asking learners to provide a link between two or more key terms. Alternatively, you could give learners some anagrams and then discuss definitions once rearranged (<http://wordsmith.org/anagram/>)

The start of the lesson will also include a recap on previous learning to check that learners are ready to move on. This will usually be based on a question and answer session but could also involve a strategy such as a spotlight session where a learner is chosen at random to recall previous work and answer questions devised by their peers.

Key questions will also be introduced in the introductory part of the lesson and should relate to the particular topics being studied. For example, in the Population Option it may be ‘What is the Demographic Transition Model and how does it apply to countries in the 21st Century?’

3.3.2 Main activities

This is the main body of the lesson and should include the specific content being taught and various activities that will engage the learners throughout the lesson. Try to aim for a variety of activities that provide for different learning styles as well as promote thinking skills and cater for differentiation. It is important to chunk the learning and build in assessment for learning activities that provide you and your learners with regular feedback about the progress they are making. Some suggestions for differentiation and assessment for learning are given later in this section.

Suggested activities for the main part of the lesson include:

Activity	Example
Brainstorming	Ask learners to work in pairs and write down everything they already about a topic. This is a good strategy to build on prior learning. This can be developed into a carousel where learners move around the room to read and add suggestions to their peers' work.
Decision making	Learners are given a variety of source information to discuss about a particular issue – for example, the problems of living in a favela. They then have several options and have to decide upon the best solution justifying the reasons for their choice. This activity works well to promote skills and group work.
Text highlighting	Learners are given a source of information and use different colours to classify information e.g. causes, effects and solutions. They can then summarise their ideas in a note taking grid.
Hot seating	A learner volunteers to take the hot seat at the front of the class. Their peers come up with questions to ask them based on the day's lesson. They could always "phone a friend or ask the audience" if they get stuck!
Back to back	Two learners sit back to back. One has a key word. The other learners ask questions to try to discover what the key word is but the other learner can only answer yes or no. A similar idea is Taboo where learners have to define a key word but have a list of words that they are not allowed to mention. This works well as a starter or plenary too.
Photo analysis	Learners are given a photo or series of photos and have to answer questions about it – what is happening, where is it taken, why is this happening, who is involved, when did this take place and so on.
Movies	There are many movies available on the internet which are a series of Powerpoint slides often including photos and activities set to music. You could try www.geographyatthemovies.com . Teachers can also create their own movies and Powerpoint slides to introduce a particular topic.

Activity	Example
Presentations	Ask learners to work in groups and give them a topic to research. The learners then present their ideas to the rest of the class. Their peers can have a note taking grid to record ideas. They can also peer assess them on the quality of their presentation. Can be a useful way to cover a content heavy section of the course and also provide an opportunity for independent learning. Add challenge by asking the learners to produce some accompanying resources, key word list and have a go at producing an examination style answer relating to their presentation.

Thinking Skills are teaching and learning strategies that not only deliver geographical content but also ask learners to reflect on the cognitive process of learning. They can be invaluable in helping learners understand how they learn and also offer great opportunities for group work. For example, the Hydrology scheme of work includes a suggestion for a living hydrograph where learners interpret a graph by matching labels to it as a group work activity.

The syllabus gives advice on the geographical skills to incorporate into your planning. This guide has already talked about how to highlight skills in schemes of work and outlined below are some suggestions for lesson activities to develop skills. Past questions provide an invaluable resource for the practice of geographical skills as does fieldwork which is discussed in Section 4 of this guide. Here are some examples of these activities.

- Using an OS map extract to identify human and physical features – for example, coastal landforms or services in settlements.
- Identifying features on a photograph and explaining how they are formed.
- Matching labels to a diagram or a graph.
- Working in groups to redraw a diagram from memory.
- Drawing a scatter graph to show the relationship between two sets of data and describing/explaining the relationship shown.
- Describing a distribution from a map – for example, the global distribution of temperature or population and then annotating the map to give reasons to explain the distribution.

Extension activities: An important part of successful differentiation is to include planned activities for extension that cater for those more able learners in the group who progress through the work at a faster pace and require more challenge. Look at the two examples in the lesson plan exemplars to see how stretch and challenge has been incorporated into each lesson.

Plenary: This is the end of the lesson where you review the learning that has taken place and make a final judgement as to whether learners are ready to move on to the next topic. Teachers should ensure that they leave time to complete a purposeful plenary and also review the objectives and outcomes of the lesson. There are many simple strategies that provide a purposeful review of the lesson. Two simple examples are:

- Keep a box of letters. Learners chose a letter at random and have to think of a key word from the lesson beginning with that letter. They then have to define the term or show how it can be used in a sentence. The learner then nominates a peer to take a turn. This is also a good way to ensure all learners are targeted in the lesson. You could adapt this by using a box of questions based on the lesson to review learning.
- Give Me 5: learners are asked to give the teacher five examples from the topic of the lesson – for example, five key terms relating to population, five areas of the world with a sparse population, five features of coastal erosion. This can be used more generically – for example, five things that I have learnt this lesson.

3.4 Differentiation, assessment, evaluation

3.4.1 Differentiation

The concept of differentiation is not new. Previously it was referred to as mixed-ability teaching. However, in recent years it has been realised that it is not just ability that is 'mixed'. Teachers/trainers have to cope with a whole range of differences in learners which impact on their learning such as their age, gender, cultural background, motivation, prior learning and experience, preferred learning style and specific learning difficulties e.g. dyslexia. As such the term 'mixed-ability' has now largely been replaced by the term 'differentiation'. So essentially differentiation is about coping with learners' differences and is a concept that must be seen in an inclusive way.

Generally the methods that do not differentiate well are those that simply deliver information such as a lecture or teacher demonstration. Occasionally we cannot avoid using such methods, so it is worth considering how to make such methods differentiate better. This usually involves ensuring learner participation such as using directed open questioning or setting tasks that require learners to apply, analyse and evaluate the information given

A few important things to remember should include the following.

- Learners should work at a level that presents a suitable challenge.
- Choices should be offered to all learners so that they can learn at their own pace.
- Try to provide multiple approaches to learning
- The work should be engaging at all times
- A variety of individual and group work activities should be used over a period of time.
- Take a risk – the learners will appreciate it!

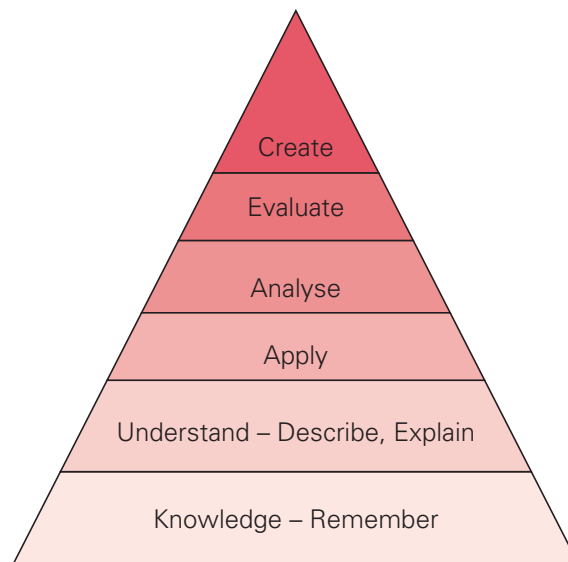
3.4.2 Methods of differentiation

By learning outcome: Differentiation can be achieved in a variety of ways. It is helpful to start by having differentiated learning outcomes that take full account of the variety of abilities within your teaching group. You can then think about how you plan your teaching and learning strategies to match the different abilities. However, it is worth remembering that it is the teaching and learning strategies themselves not just the learning outcomes that achieve successful differentiation.

By support: You may use teacher intervention to provide support to a learner who is struggling by taking time to explain the work to them again during the lesson. You may also suggest some background reading and useful revision websites as well as provide some practice materials. Support can also be provided in the form of additional scaffolding for a task or by the use of a resource such as a writing frame or help sheet. At the other end of the scale, teacher intervention may be used to ask searching questions of the more able learner or suggest activities to them that will move them on and add challenge.

By questioning: Bloom's taxonomy can be used to help teachers to plan their questioning and use target questions effectively to match learner ability.

Bloom's Taxonomy (Revised)
http://www.apa.org/ed/new_blooms.html



Based on an APA adaptation of Anderson,
L.W. & Krathwohl, D.R. (Eds.) (2001)

Below are some examples of questions that have been created using Bloom's taxonomy to illustrate a hierarchy of questioning and to show how questions can be used to challenge more able learners.

- Can you describe what happened in the earthquake?
- Can you explain what caused the earthquake?
- Can you group the effects of the earthquake into those on people and those on the economy?
- How is this earthquake similar to another example that you have studied?
- How would the effects be different if this country was a Less Economically Developed Country?
- How would the earthquake be different if it measured....on the Richter Scale?
- Evaluate how successful the rescue attempts were?

- Evaluate how successful the prevention measures put in place were?
- Do you think there any are better solutions?

By resource: Teachers can also consider the resources that are used to achieve effective differentiation. Additional resources can be provided such as writing frames to support learning as already discussed. However, the introduction of additional and more complex resources can also be used effectively to add stretch and challenge to a task.

By task: Differentiation can be successfully achieved by task – for example, varying the nature of a task to suit the ability of the learners. An example of this would be to have three groups of learners matched to their ability working on producing a presentation for the rest of the class. The most able group has an open ended brief with a choice of how to present their work and are given several complex data sources. This group also has a stretch and challenge question to respond to. The next group has more guidance about the content of the task (maybe some help points) and a reduced number of resources to respond to. The least able group will have more advice about the content required, may have a writing frame or note taking grid to provide support with how to present the work and initially might work with just one or two resources. Worksheets and activity sheets can also be graduated to cater for differentiation.

Extension activities: In order to provide for the most able learners within your group it is always important to consider challenge – whether this comes through questioning, resources, differentiated tasks or planned extension activities as shown on the lesson planning exemplars. In addition, you may decide to use more able learners as “experts” within the classroom when organising group work activities.

Learning styles: At the start of this section we talked about differentiation as a way of catering for individual learner needs in relation to learning styles as well as ability. There are three main learning styles – visual, auditory and kinaesthetic – it is helpful to try and use all of these styles in your delivery both as a way of creating variety and as a way of exploring the same idea using different senses. Try to incorporate this approach into your lesson plans. Here are a few examples of activities that can facilitate different styles.

- Visual: photographs, mind maps, highlighting text.
- Auditory: the use of music or perhaps a group talk.
- Kinaesthetic: card-sorting, role-play/drama or carousel activities.

3.4.3 Assessment

There are two different types of assessment:

Summative assessment includes tasks such as practice examinations that are awarded a mark or grade. They check understanding at that particular point in time and examples include:

- use of a past question, which could be under timed conditions, part way through or at the end of a unit of work
- use of a past paper in the style of a practice examination

Summative assessments are given periodically to determine what learners know and do not know at a particular point in time. They are used to provide information to the teacher about the grade a learner has achieved for a particular piece of work and are useful to track progress over time. They can also be used to inform predicted grades. **Summative assessment is used for reporting to others. You may want to use past questions and published mark schemes to inform your summative assessment.**

It is useful to keep a record of summative assessments, for example in a planner or spreadsheet, to track learner progress over time in relation to the grade that you expect them to achieve at the end of the course. In this way, it is possible to identify underachievement at an early stage and put in place intervention strategies to address it.

It is also important to use the results of summative assessment in a formative way – for example, looking at areas where learners underperformed and using this information to review schemes of work and lesson plans. Learners can also use summative assessments in a formative way by identifying their strengths but also setting personal targets for improvement based on the grade awarded.

Formative assessment is part of the learning process. When incorporated into classroom practice, it provides the information needed to adjust teaching and learning while it is happening in order to raise learner attainment. It includes strategies such as question and answer and self/peer assessment to provide feedback to learners to raise attainment. **It is continuous and informal in its nature.**

3.4.4 Implementing formative assessment in the classroom

An important starting point is having clear learning objectives and outcomes that can be revisited during the lesson using mini plenaries to provide feedback to learners about the progress they are making.

For example, a group have just completed a task about the demographic transition model. The teacher is keen to assess their understanding of this before moving on with the learning. The relevant outcome could be revisited and learners asked how they rate their confidence level with the outcome by showing a red, amber or green card (RAG). Red would indicate that they do not understand the concept and need some more help, amber would indicate that understand most of the concept but need help with one or two ideas where as green would indicate that they are confident with their learning and ready to move on.

This provides invaluable information to the teacher about the learning that is taking place in the lesson. However, it is important not just to rely on the learners' self assessment of their progress and a teacher would want to follow up a red, amber, green activity by a question and answer session or a quick activity (e.g. true/false or odd one out) to check understanding. Learners can also have RAG cards on their desks during independent learning to indicate whether or not they require teacher support.

Question and answer is another invaluable tool for formative assessment. We have already talked in this guide about the use of Bloom's taxonomy to structure a hierarchy of questions and build in challenge for more able learners. The teacher can skilfully use questioning to identify what the learners have understood and to check their understanding as well as provide prompts where they feel appropriate. It is helpful to build in thinking time before questioning – for example, "think, pair, share" where learners have time to consider their response, discuss it with their partner and then feed back to the group. This can considerably improve the number and quality of learner responses. Learners might devise their own questions for their peers and use them in a mini plenary activity such as hot seating or a spotlight session.

It is important to target as many learners as possible during a question and answer session. You may instruct learners to put their hand up only to ask a question but choose learners yourself to answer questions. Alternatively, you can use software such as a random name generator or put learner names into a hat and pick from them at random. Another interactive strategy that works well is question and nominate – ask a learner a question and then they nominate the person who is going to answer next.

Teacher comments are critical in providing formative feedback to learners. Summative assessments will be awarded a grade but can also have accompanying comments. You will also set other pieces of work that focus upon the development of specific knowledge, understanding or skills. Providing diagnostic comments will allow learners to identify where they are doing well and what they need to do to improve. Asking learners to set their own targets from your comments means that they take time to read and digest your feedback. Self and peer-assessment are also useful strategies. Here are some examples.

- Provide a model answer and a mark scheme and ask learners to award a grade and justify their decision. This will help them to understand the marking criteria and give them the opportunity to apply it. The teacher may need to provide support by putting the mark scheme into 'learner-speak' where appropriate.

- Ask learners to mark their own piece of work using a mark scheme in the same way.
- You may also ask learners to swap work and peer assess in the same way as a self assessment exercise. This can also be applied to other examples of work such as group presentations.

3.4.5 Evaluation

The teacher should spend some time at the end each the lesson and unit of work reflecting on the lessons taught and if they should be changed in any way for the next session. We have already talked in the previous section about how summative assessment can be used in a formative way to evaluate lesson plans and schemes of work. Here are some more ideas for evaluation:

- (i) Reflect on and evaluate feedback from learners

Feedback from learners may be written or spoken, it may be spontaneous or planned, it may be ongoing during lessons or it may take place at the end of a unit of work. Reflecting on and evaluating learner feedback involves collecting, recording and commenting on the learners' reactions to the teaching and learning they have experienced.

Suggested activity 1

Choose a class of at least 10 learners who you have been teaching for at least a month, preferably longer. Create a questionnaire (online or on paper) to get feedback from these learners on your teaching of both content and language. What do they consider goes well in your classes? What teaching and learning strategies have they enjoyed? Which teaching and learning strategies are the most effective? What improvements would they like to see? You can use a variety of open and/or closed questions.

Analyse the responses from your class and discuss their answers with them. Give them your response to their answers too.

- (ii) Reflect on and evaluate teaching strategies

When you reflect and evaluate your teaching strategies, you comment on how the techniques you used in your lesson helped learners.

Suggested activity 2

Keep a journal or a blog about one of your classes. Discuss some of your reflections with your colleagues.

- (iii) Integrate feedback into planning for future teaching

Feedback from learners and reflections provides you with information about what you do well, and areas in which you could improve with respect to teaching bilingual learners. When you integrate feedback into planning for future teaching, you show how you turn feedback into action points for your next lessons.

Furthermore, for the learners themselves they should learn to reflect on strategies they use to organise their ideas and learning. They should be able to identify and provide reasons for their point of view, and justify changes in their thinking.

Learners can use self-evaluation or peer evaluation with other class members.

Self-evaluation involves the learner individually reflecting upon and evaluating their contributions to the learning taking place in the classroom which could have been on an individual basis or as part of group work.

Peer evaluation involves the learner individually reflecting upon and evaluating the contribution of others to their learning that is taking place. For staff, this may involve having a colleague observe their teaching and providing an evaluation in the form of specific feedback.

3.4.6 Thinking and cognitive organisers

It is difficult for teachers to see what is going on inside learners' minds. One way of making thinking processes more visible is to use cognitive or graphic organisers, which are also scaffolds. There are many possible ways of visualising ideas (timelines, Venn diagrams, tree diagrams, mind maps, flow charts). These types of organisers are particularly useful for bilingual learners, as they help learners organise information into more manageable chunks, and they demonstrate relationships between ideas visually, so that language is less of a barrier to understanding. Cognitive organisers can be used to help learners understand information.

Suggested activity 3

1. Carry out a web search using the term "graphic organisers".
2. Select either a written text (from a course book or reference book) or a spoken text (a presentation, or DVD) you would use with your learners.
3. Select one of the graphic organisers you found in your web search to design a reading or listening task for your learners.

Example site

<http://www.graphic.org/>

3.4.7 Assessment for Learning

The teaching strategies discussed throughout the guide can be brought together as a conceptual approach known as Assessment for Learning. It might be summarised by the following:

1. the provision of effective feedback to learners
2. the active involvement of learners in their own learning
3. adjustment of teaching to take account of the results of assessment
4. recognition of the profound influence assessment has on the motivation and self-esteem of learners, both of which are critical influences on learning
5. the need for learners to be able to assess themselves and understand how to improve

Section 4: Classroom practice

4.1 The role of the teacher

Cambridge recommends active learning as a strategy that enables learners to grasp knowledge and skills through application, both contextually and experientially. The learners' increasing engagement in the learning process slowly transforms the traditional (didactic) role of the teacher. The teacher becomes a guide and a facilitator, someone who enables learning rather than someone who dictates knowledge to passive recipients. This method allows the teacher to be more flexible in their approach to teaching and to provide a positive and interactive learning environment within the classroom.

For example, if a teacher were to present information to learners via a presentation or lecture, this would be a didactic style of teaching. The learners would listen and might record some notes but would be largely passive in the process of learning.

The teacher becomes a facilitator when they begin to set up appropriate learning tasks, providing the appropriate resources, support and expertise to allow learners to successfully acquire new knowledge, understanding and skills. An example would be:

Example of facilitative teaching

The teacher establishes a topic for investigation taken from the scheme of work. The learning task is for learners to complete a presentation. The learners are given the investigation title and work in groups to firstly, identify the questions they want to be able to answer about this topic and the headings for their presentation. The teacher would take feedback on this to check that the learners' questions cover the necessary content from the syllabus. The teacher would then facilitate learning by suggesting resources that the learners may want to use and providing support during the group activity through skilful questioning and prompts. When the learners present their ideas back the class, the teacher would enhance learning by asking additional questions to challenge learners or making suggestions for further points that they could add to their presentation. Finally, the teacher could provide the learners with a past question and explain a mark scheme to them, giving them the opportunity to apply the knowledge, understanding and skills that they have gained. The teacher would also provide feedback on the final piece of work enabling learners to identify strengths and targets for improvement.

The role of the teacher is also to manage learning. This involves making decisions whether this be how long to spend on a unit, which options to study and in what order. These decisions will have been made in your medium-term planning. A teacher will also make decisions when planning lessons, thinking about which resources are best to use and which teaching and learning strategies would best suit both the learners and the topic being delivered. The teacher is also an organiser of learning – for example, deciding on learners' groups to carry out certain tasks or setting up fieldwork opportunities.

In addition, the teacher is the subject expert not only through their role in translating the syllabus into a series of lessons but also by providing the subject-specific input that is needed to facilitate effective learning. Teachers also act as practice examiners by marking the work of learners in the same way that it will be examined at the end of the course and by setting past questions, sharing mark schemes, providing subject-specific feedback and producing model answers to exemplify standards.

4.2 The role of the learners and learner involvement

Using the active learning approach encourages learners to become more confident and independent in their learning, developing the skills that will be required of them at a higher level of education, should they choose to continue. These skills also have a broader application as general life skills.

Learners should aim to be:-

- inquisitive
- critical
- articulate
- open-minded
- reflective
- knowledgeable

As teachers we can have certain expectations of our learners who, like the teacher, have a key role to play in ensuring a successful outcome at the end of the course. For example, we would want learners to:

- participate in group work and class discussions
- complete the work set and meet deadlines
- complete independent research
- read around the subject
- prepare carefully for examinations

Sometimes, learners may need support in making the transition to A Level where often a more independent learning approach is required. At the start of the AS course it can be useful to spend some time focusing on the learning skills that learners will need for an A Level Geography course. It is helpful to provide them with strategies to tackle skills that are new to them – for example, note-taking and essay writing.

Examples of how teachers can help their learners to use and develop learning strategies include showing learners how to:

- use a variety of note-taking techniques including text highlighting
- plan, organise and review notes
- undertake independent research
- manage their time effectively
- plan a written answer
- draft written work
- use visuals to support understanding and revision
- make use of opportunities to practise outside the classroom
- develop key word and command word glossaries
- develop case studies revision materials

4.3 Strategies for managing learning

Ultimately, learners' interest and motivation to enjoy and do well in Geography will be fuelled by their ability to make progress in the subject. Think about the variety and pace of learning when you are planning units and individual lessons in order to sustain the interest of your learners.

Research consistently shows that there is a strong positive relationship between the amount of time learners spend interactively engaged in their learning and the level of achievement they attain.

Learners develop their understanding of subject content by participating in learning activities which involve thinking, speaking and writing as, in combination, these activities strengthen the learners' awareness of the interconnectivity of ideas and information.

Therefore, aim to use a wide range of teaching techniques that will keep your learners engaged with the subject. Some suggestions include:

1. Taking notes and text highlighting
2. Analysing photographs
3. Using movies and DVDs
4. Decision-making activities
5. Question and answer sessions and class discussion
6. Role plays.
7. Using ICT
8. Problem solving activities
9. Thinking skills
10. Mind maps
11. Skills and map work activities
12. Presentations

Interactive work can be managed by arranging the class into a range of groupings i.e. working as individuals, in pairs, in groups or as a whole class together and the teacher will decide which classroom organisation is best suited to the learning task. This can also assist differentiation in the task – for example, by either grouping learners of similar abilities together or by attaching lead learners/experts to each learner group. You may also want to consider the preferred learning style of learners. Sometimes, different topics lend themselves better to different approaches. For example, when teaching about physical features you might make use of photographs, annotated diagrams and map work. On the other hand, when looking at human issues, you might find decision-making activities and role plays more suitable as learning activities.

It is important to reflect on the teaching and learning strategies that we use and evaluate how successful they have been. It is also important to use the results of learner assessment to decide whether a different approach would have achieved a more successful outcome. Lesson plans and schemes of work can then be annotated and reviewed in light of this reflection.

4.4 A note on fieldwork

Fieldwork is an excellent form of active and practical learning where learners have the opportunity to see the Geography that they have learned in the classroom come alive. Not only does fieldwork turn the abstract into the concrete, it also offers great opportunities to develop the following:

- group work
- the collection of primary data,
- the use of secondary data and analysis of statistics to support the fieldwork investigation
- skills of enquiry
- map skills
- an appreciation of the limitations of the data collected
- geographical skills including analysis and synthesis
- local case study material to be used in examinations.

Fieldwork can take place on the school site, locally or may be planned as a residential experience. For example, the school site could be used during a lesson to quickly illustrate the variation in infiltration rates on different surfaces or the effect of buildings on temperature and wind speed. The residential experience offers opportunities to study topics from more than one part of the syllabus at the same time. You may decide to plan this for yourself or use an established field study centre who will offer tailor made courses to suit your needs.

Some examples of fieldwork are given below. These examples could each take place on a day visit or could be combined if the location is suitable – for example, the study of a river as illustrated below could be combined with the impact of tourism on a honey pot site.

Examples of fieldwork	
Migration	The impact of urban-rural migration OR rural depopulation on a village. This could include an examination of population change over time, land use mapping to show changes in shape and function and questionnaires to investigate the impact of change on local people.
Settlement	<p>Mapping service provision in local settlements to place them in a hierarchy. Some of this could be done using OS (Ordnance Survey) maps and some in the field. The results could then be compared to a hierarchy based on secondary statistical data such as population size.</p> <p>Delimiting the CBD (Central Business District) of an urban area and investigating how land use varies with distance from the PLVI (Peak Land Value Intersection)</p> <p>An investigation into housing changes with distance from the city centre and how this compares to the models of urban land use. This could be supplemented with census data to show socio-economic variations.</p>

Hydrology	Measuring changes in a river – for example, velocity, cross sectional area, load - with distance downstream. You could also incorporate a cross section through a meander, valley side profiles and field sketches of erosion and deposition features.
Rocks and Weathering	An investigation into rates of weathering in a local graveyard to consider the influence of aspect, age and rock type
Coasts	Cross sections of beach profiles and an examination of how waves vary on two contrasting beach profiles Field sketches of landform features A transect through a sand dune ecosystem A cost/benefit analysis of coastal protection schemes
Environmental Management	The impact of tourism on a honeypot site and the strategies for managing this in a sustainable way.

You can also make use of secondary data in the classroom to build up a case study and develop skills – for example, you could use data for employment structure, unemployment, house prices and age profile of the population to consider the impact of deindustrialisation. There are also virtual fieldwork sites which can supplement learning particularly for topics where fieldwork is not possible. It is important to think about the practicalities of any fieldwork undertaking and follow the appropriate risk assessment procedures for your school.

4.5 A note on case studies

Case studies are a key feature of teaching any Geography syllabus. They provide opportunities for learners to apply their knowledge and understanding to real life examples and therefore move learning from the abstract to the concrete. The study of real examples using materials such as maps, data, photographs and diagrams also offers learners the opportunity to develop skills first hand that will be invaluable in preparing them for their final assessment. Here is general advice relating to the teaching of case studies:

Check the syllabus to see if there is any specific information given about case studies in terms of scale or context. For example, Unit 3 Hazardous Environments requires learners to learn about two earthquakes as case studies but specifies that one should be from a More Economically Developed Country (MEDC) and the other from a Less Economically Developed Country (LEDC).

Case studies are often well documented in core textbooks but teachers should feel free to use a variety of other information to supplement ideas such as maps and photographs. This will also provide good opportunities to develop geographical skills.

For example, a photograph analysis could be used to teach the problems of living in a Favela in Sao Paulo or a decision-making activity based on maps and planning proposals used for learners to decide upon and evaluate the best solution to the LEDC housing problem.

Try to use local examples where possible – they will be more real to learners and therefore, they should be able to remember them more easily in an examination situation.

Fieldwork offers excellent opportunities to develop case studies and what better way to learn than by studying something first hand?

Geography is a truly dynamic subject so try to make use of up-to-date events that are happening as you teach. Learners will engage with examples that they are seeing in the news and may be better informed about them. There is also usually lots of readily available and completely up-to-date material to support the development of teaching resources.

Case studies can sometimes be daunting for learners. There is a lot of detail to remember and sometimes they find it difficult to work out which case study to use for which examination question. Below are some suggestions of quick teaching strategies that could help:

Developing skills in working with case studies

Use an agreed symbol or notation in learner notes to highlight case studies

Give learners a checklist of the case studies needed for each unit

Devise a simple sorting activity where learners match case studies to examination question and use a starter activity for a lesson. Revisit several times to consolidate learning.

Provide a revision template for case studies so learners can summarise key learning points

Develop a case study revision booklet over time

Section 5: Preparing learners for final assessment

The planning at the start of the course should include some time allocated to preparing learners for the final examinations. This would take the form of a block of time allocated to final revision and the practice of past papers. However, it is essential to also focus on the examination throughout the course by using past questions as both resources and assessment opportunities which you can highlight in both schemes of work and lesson plans. This ensures that your learners become familiar with the style of the questions and the expectations of the examination paper; that they have opportunities to apply mark schemes and identify any concerns at an early stage rather than just at the end of the course. It also means that learners prepare and revise throughout the course, consolidating learning, rather than just learning all of the content at the end of the course. Geography is a content-heavy subject so finding strategies to help learners manage their revision is crucial.

When marking past papers it is important to use the published mark schemes to inform you. They will give you guidance about how the marks are to be awarded. Some questions are point-marked whereas others are marked in levels – level descriptors are provided to help you. See the extract below:

Extract from the 9696 Geography Advanced Level Physical Option Paper 2 from June 2011 Markscheme

- 2 (a) Describe the factors that lead to the development of deep weathering profiles on granite in tropical environments. [10]

The main factors are related to granite as a rock, climate, vegetation, relief, hydrology and time. Rock influence includes the mineralogy and structure of granite with joints being of prime importance. Closer spaced joints will be preferentially weathered by percolating ground water. Vertical joints have a greater influence than horizontal joints. Coarse grained granite, especially with large feldspar crystals, might be weathered faster than fine granite. Water from abundant rainfall powers the weathering process especially hydrolysis. Relief governs the movement of water downwards or laterally down slope as throughflow. Abundant vegetation leads to humic acid formation which aids weathering. Stability is important in allowing sufficient time for deep weathering to occur. Much credit can be obtained from annotated diagrams.

- (b) To what extent do the nature of soils and climate cause problems for development of tropical savanna regions? [15]

Soils are generally infertile and coarse grained. Seasonality of rainfall causes precipitation of minerals within the upper horizons rendering cultivation difficult. A hard lateritic layer is characteristic of many areas. Soils often lack organic matter and are poorly structured. Soil erosion is rife. Seasonal and variable rainfall also make development difficult with a gradation from the edge of the TRF to semi-arid regions. May mention other factors such as population pressures, overgrazing, etc to indicate the relative importance.

Level 3

Good knowledge of the nature of soils and climate and how they affect development. Some may recognise the gradation across the savanna and relate to sustainability. Other factors expected at this level in discussing extent. Examples will be accurate and relevant. (12–15)

Level 2

Some recognition of the nature of soils and climate but will often treat them as two separate groups of factors and not see them as integrated. Some vagueness in describing soil properties. Evaluation limited and likely to be between soils and climate only. Examples may be lacking or somewhat simplistic. (7–11)

Level 1

Limited grasp of the nature of soils or climate with an inability to relate them to development. Lack of relevant examples. (0–6)

It is also essential that learners are aware of the key facts about the examinations such as the length of each paper, the structure of the questions and the rubric. Practice of past papers will help to embed this but it is also useful to provide an overview of the syllabus and assessment arrangements to learners at the start of the course for them to refer to. Tips can be given on study skills and ways to revise as well as advice on examination techniques such as encouraging them to allow time to plan their answers and re-read and check their work. Taking time to ensure that learners fully understand command words such as 'explain', 'evaluate', 'discuss' etc., through key word activities and glossaries, is also essential. Asking learners to underline the command word in each question can also be a helpful strategy.

5.1 Use of past papers, mark schemes and examiner reports

Without doubt one of the best ways to prepare learners is by using the materials provided by Cambridge, either on the website or the discs that are sent out every October or March. These provide a full range of past papers, mark schemes and examiner reports.

These resources ideally should be used throughout the course not just during revision sessions.

5.1.1 Using past papers

For example, a good way to use the past papers is to cut out each question on a particular topic and paste it onto an A3 sheet of paper for the previous examination sessions. In this way the learners can see all of the questions that have been set recently and get to understand the style of questions and resources used. They can use the space on the right of the paper to prepare answers before going through them in class.

It is good practice to set past questions as regular homework or class activities and sometimes under timed conditions to get learners used to working under examination conditions. The questions can be teacher assessed as useful assessment opportunities but also provide invaluable opportunities for peer and self assessment opportunities. It is helpful to provide model answers for learners so that they can see the standards required. Sometimes, learners could be given a model answer and asked to decide what grade they think it would get and justify a reason why.

The mark schemes should also be used on a regular basis and it is helpful for learners to have copies of these. They not only provide the answers but are invaluable tools for highlighting the relevant geographical terminology that the examiners are looking for. The mark schemes also help to provide teachers and learners with a clear idea of the standard that each level of marking requires and what might separate those levels at the borders. Ask learners to use a mark scheme to assess either their own answer, the work of their peers or a model answer. This will give them invaluable experience of applying a mark scheme and understanding the criteria by which they will be assessed. The role of the teacher here will be to help to explain and exemplify the mark scheme as well as put it into 'learner speak' where appropriate. It is important to make learners aware of how some answers are point marked but also how others are marked in levels and to discuss the levels-based marking system with them. (Find the general level first and then narrow down the detailed marks afterwards within the level.) Give them examples from published mark schemes. In becoming familiar with this, learners will better understand what they need to do to gain marks and reach the higher level.

5.1.2. Using Examiner Reports

The Examiner Reports themselves give immediate feedback on the previous examination series and recommendations on how to improve learners' performance. These detailed reports, written by the Principal Examiner, highlight the strengths and weaknesses of candidates and indicate what makes a good answer and what pitfalls to avoid in teaching the syllabus. Teacher Support has archives of these reports from a number of previous series. It is important that these reports are used as part of teacher evaluation of medium-term planning and lesson plans and are used to make revisions to schemes of work where appropriate.

5.1.3 Other strategies

Other useful strategies for preparing learners for examinations include:

- Key word glossaries
- Command word glossaries
- Case study lists and revision sheets
- Lists of revision web sites
- Revision and study skills techniques
- Model answers

5.2 Homework / independent learning

The learner is of course alone in the exam room with neither text nor teacher and it is important during the course that independence and confidence are nurtured by the teacher from an early stage. Homework and self-assessed (or peer-assessed) assignments are one tool in the teacher's toolbox to foster these skills. The decision as to when this technique should be applied will depend on the experience and background of the learners – those who have already successfully completed IGCSE exams should very quickly be able to develop the skills required.

Homework should:

- reinforce principles, skills, concepts and information taught in the classroom
- provide opportunities for learners to extend their learning
- be meaningful and appropriate to the current level of study of the learners
- support creative, logical and analytical thinking
- promote self-discipline and self-motivation
- be explained clearly by the teacher and understood by the learners
- be used in lessons and receive regular feedback so it is seen to have value by the learners.

The homework tasks themselves can take various forms such as:

- making notes on a particular topic
- completing some background reading or highlight an article
- preparing a presentation to be delivered in front of the whole class
- working in a group to research and write-up a particular case study
- general research on the internet or out of textbooks
- to find and watch a relevant video on a certain topic
- to write an essay relevant to the current unit being taught
- to answer a past paper question

Section 5: Preparing learners for final assessment

- to prepare a past paper question for a test
- to revise for a test without knowing the actual question set
- to revise for a full practice examination
- preparing for or writing up a fieldwork activity
- collecting fieldwork data
- carrying out skills activities.

Homework tasks should be varied throughout the year in order to make the work stimulating and engaging for learners.

Section 6: Resources

6.1 Finding and evaluating resources

There are many internet sites now that are set up to support the teaching of Geography – some of these are aimed at teachers and provide useful lesson resources whilst others are aimed at the learners and provide excellent materials and activities for revision. A general internet search relating to a key word or topic will also bring up some sites that might be useful but if these are not specifically designed for educational purposes, you may need to adapt the content and the language used. You can use the traditional search engines such as “Google” and “Yahoo” for this purpose.

Geography is a dynamic subject and is changing all the time. Therefore, events in the news whether presented as articles, internet links or video clips can be a wonderful resource to provide up-to-date information often using a variety of media. Photographs and video clips are wonderful teaching strategies to cater for visual learners and to bring geography alive – you can search for photographs using Google images and sites such as the BBC Learning zone provide a huge variety of video clips for classroom use to download. Alternatively, sites like You Tube offer video clips or you can keep an eye on the National Geographic and Discovery channels for programmes that you might be able to adapt for use in the classroom. Commercial companies will also offer photo packs and DVD resources for sale.

You may find Powerpoint presentations that are available on the internet that other teachers have used and provided. A good site to look at is www.geographyatthemovies for ideas of how presentations can be used effectively to introduce a topic or deliver content. Whilst using presentations such as these can provide inspiration and also save time, it is important to look at the target age group and the syllabus that the presentation was written for and adapt it if required.

Once you have found and used a resource, you will wish to evaluate its usefulness and suitability and may choose to adapt it before using it again. You could annotate your scheme of work or lesson plan to make a note of how you used the resource or how you may wish to alter it. You could also ask learners for their opinion of how “user-friendly” a resource was and use their suggestions to make changes as well.

6.2 Sharing resources

As you build up resources to complement your scheme of work, you will want to keep a Master File so that the resources are both available for the following year and also for other colleagues to use. This could be a paper file or a folder on a network shared area. The advantage of this is that it not only saves time but also provides an excellent opportunity to share ideas and disseminate good practice. You could also consider sharing resources in the same way with other local schools. This may be particularly useful with regard to fieldwork equipment which can be expensive for a single department to invest in. The Cambridge website has a community area where you can access resources and there is more detail on this in the next section.

6.3 Creating resources

There are many resources that you can buy to use to teach A Level Geography. However, there will be times when you will want to create resources that specifically suit the syllabus and the needs of the learners in your classroom. In creating a resource, you will want to consider the following:

- what resources already exist locally or in the school that I can use or adapt?
- are there any past questions or mark schemes that can be incorporated into my resource?
- what are the aims and objectives of the syllabus that the resource is addressing?
- do I want the resource to be used to support self-study or is it a classroom-based activity?
- is the resource for individual, pair or group work?
- how can I differentiate the resource to meet the abilities of the learners in my group?
- does the resource cater for visual, auditory and kinaesthetic learners or a combination?
- can I incorporate any geographical skills?

In the next section are some examples of resources and how they can be used.

6.4 Examples of resources and their uses

This section aims to give some examples of resources and how you might use them to support your teaching of A Level Geography. The list is by no means exhaustive but instead is designed to give you a flavour of some of the strategies that could be used for creating resources for your lessons.

Textbooks: There is a large variety of textbooks that can support this syllabus and you will need to consider which ones are the best for each particular aspect of the course that you are delivering. The scheme of work and resource list is the best place to start. Textbooks can be used to provide information to inform teacher resources such as activity sheets or PowerPoint presentations. They are also invaluable in setting learners background reading or note-taking to support a particular topic. In order to guide learners more, you may want to use a note-taking grid, set specific questions based on a section of the textbook or use the suggested activities or questions provided in the text. Textbooks may also have accompanying CDs that can provide useful additional resources.

Geofiles and Geography Review articles: These publications are useful to provide up-to-date information and are often invaluable sources of information for case studies. Like textbooks, they can be used in a variety of ways. Teachers can ask learners to read the article and highlight it in different colours to show different categories of information. Different groups of learners could be given a section from the article and be asked to annotate it and then report back to the rest of the group about what they have learned from it. Questions could also be set, based on the article (or more than one article) asking learners to compare the information provided by both. You may decide that an article is simply used as background reading to supplement work already covered during a lesson.

Presentations: Powerpoint presentations can be very useful to help a teacher to structure their lesson. They could include the learning objective, outcomes, activity tasks and plenary for example. They are also powerful ways of showing photographs and diagrams. There are also software packages available that include interactive activities for a Smartboard and simulations. Creating your own movie from photos set to music can be a very powerful hook to start a lesson.

Activity sheets: Sometimes, a textbook or article may not give you the exact information that you need. In this case, you may want to combine different parts of texts and create your own activity sheet. For example, you may take a location map from one textbook, a photograph from Google images and some text based on a Geofile to provide learners with the information that they need. You can then devise your own tasks and questions to achieve your learning objective. It is useful to include a key word list on your activity sheet and also to cater for differentiation by having graduated questions including a stretch and challenge task.

Assessment for Learning resources: Answers to past examination questions can be provided and learners asked to annotate these to show what grade they would give it, what the strengths are and targets for improvement. Learners can be given mark schemes and asked to highlight and annotate as the teacher explains it during a lesson.

Card-sorting activities: These are a useful kinaesthetic activity that can be used as a starter, plenary or main activity. You may want learners to match key words and definitions, case studies to exam questions or could give them information that they have to sort into categories – for example, social, economic and environmental impact.

Role plays: The starting point with creating a role play resource is to think of the issue that you want learners to consider. You then need to decide upon the key people that will have a view on this issue. Devise cards for each role that give background to each person and maybe some prompts to stimulate learner thinking. You could try Edward de Bono's thinking hats as a thinking skills activity too.

DVDs: These can be bought commercially or clips can be downloaded from the internet or recorded from appropriate channels. Very often it is best just to show short clips at a time and devise a task to accompany the clip – for example, some questions to respond to or a note taking grid to complete.

Maps, photographs, graphs and images: These are fantastic resources to deliver geographical skills and you can make use of past paper inserts and questions here to build up a bank of resources. They also provide excellent stimulus for starter and thinking skills activities – for example, analysing a photograph to introduce a topic or labelling a living graph.

6.5 Adapting resources

There are many commercially available products that can be used to support the teaching of A Level Geography. For example, internet sites provide resources prepared by other teachers; there are teacher resource packs to accompany textbooks, software packages and revision materials/guides. All of these can be extremely valuable and provide the teacher with lots of material and ideas for learning activities as well as save time in creating new resources. However, you will want to adapt them to ensure that they meet the requirements of your syllabus as some of them will be written as general resources for teaching Geography and therefore, might include topics that you may not need to teach. Similarly, you may find that certain topics are not covered in sufficient depth or the case study choices do not match the ones specified in your syllabus. You will also need to check that the resources are suitable for the ability of your learners as well as relevant to them – for example, you may wish to develop your own local case studies that are real to your learners rather than use pre-published ones based on other localities which will not be as meaningful to them.

When sharing resources with colleagues within your school, you will want to adapt them perhaps to suit your particular teaching style and certainly to match the abilities of your learners. This will mean that you might differentiate them in some way – this could be providing some prompts or key word definitions on the one hand or a planned extension activity for your more able learners on the other.

6.6 Teacher Support and other websites

Key features:

- Access to past question papers, Examiner Reports, schemes of work, lesson plans, teaching notes, worksheets, activities, tests, favourite web links and other teaching materials.
- An events area that allows you to search for events and conferences by location and exam
- A Community area where you can share and exchange information about the syllabuses, swap ideas about teaching strategies and best practice, share teaching materials, ask for help and suggestions from other members of the community.
- For some of our qualifications, interactive resources are available in addition to syllabus materials, teaching materials and resource lists

A resource list for A Level Geography is provided by Cambridge on Teacher Support comprising a list of up-to-date textbooks and journals that are appropriate to use or adapt when teaching this syllabus. There are also suggested resources within the published Cambridge schemes of work relating directly to the learning objectives of the syllabus, plus a description of which part of the resource is particularly useful. Some textbooks provide a general overview for teaching at AS and A Level whilst others are targeted specifically at one unit of work. The latter tend to provide more detail and can be helpful to supplement core textbooks if you feel greater depth of explanation is required.

Visit the Teacher Support website at:

<http://teachers.cie.org.uk>

The Cambridge Coordinator or Exam Officer in your school will be able to give you a login. If you have any difficulty obtaining one please contact customer services. You can find the details below.

Ask CIE

'Ask CIE' is a bank of answers to frequently asked questions from Cambridge Principal Examiners, teachers, learners, parents, examinations officers and other customers. You can enter your query into the search box (which appears on every page) or navigate using the topic list menu on the left-hand side of the page. If at any point you decide you would rather call or email someone at Cambridge you may do so by visiting the Contact Us page.

Visit Ask CIE at:

www.cie.org.uk

Customer services

You can also email us via info@cie.org.uk or call us on +44 1223 553554.

6.7 Endorsed textbooks

Endorsed textbooks are recorded in our resource lists which are available on the Teacher Support site as mentioned above. An endorsed title is defined as one that has been written to closely follow the qualification it relates to, and it is therefore suitable to be used as teaching material for that specific subject. We also provide a list of recommended titles which are useful as a reference resource when teaching or studying the subject but which have not been written specifically for the qualification they are linked to. The endorsed textbook for this syllabus is Cambridge International A and AS Level Geography by Garrett Nagle and Paul Guinness.

6.8 Training

Online training

Three types of online training and support are currently available to Cambridge Schools. Check the events tab of the Cambridge public website www.cie.org.uk to find out when these are available and to register as a delegate.

- **Introductory self-study**

Where available these courses provide essential information for teachers who are new to the Cambridge syllabus, and include activities that familiarise teachers with the qualification. These courses do not have a tutor. Teachers are given access to these courses for six months.

- **Online tutor-led**

These courses are led by a Cambridge examiner. They focus on classroom practice. Participants follow a three-unit programme over six weeks and can interact and share resources with teachers from other Cambridge schools.

- **Online seminars**

These seminars are led over a short period by an examiner and focus on specific issues such as syllabus changes or the recent examination session.

Face to face training

We run an extensive programme of short professional development courses across the world for teachers at Cambridge schools. These workshops are run by professional trainers or experienced local teachers. These courses offer teachers the chance to update their knowledge, learn new skills and network with other teachers. Again, check the events tab on the Cambridge public website to find these courses and register as a delegate.

6.9 Professional development for teachers

Cambridge also offers professional qualifications for teachers who want to develop their thinking and practice.

Learn more about the Cambridge International Certificate for Teachers and Trainers and the Cambridge International Diploma for Teachers and Trainers at:

www.cie.org.uk/qualifications/teacher

Appendices

Sample extracts of the published Cambridge scheme of work

Paper 1 Physical Core Unit 1: Hydrology and fluvial geomorphology

Paper 2 Physical Options Unit 2: Coastal environments

Paper 3 Human Options Unit 2 Environmental management

Sample lesson plans

The Demographic Transition Model

Introducing Plate Tectonics

Example scheme of work Paper 1 Physical Core

PAPER 1 Physical Core

Unit 1: Hydrology and fluvial geomorphology

Recommended prior knowledge

Learners require little prior knowledge for this unit. They may have some foundation from earlier studies, such as Cambridge IGCSE® /O Level Geography. However it is recommended that the key concept of the hydrological cycle is introduced in the first or second lesson.

Context

Although this is a discrete unit, close links exist with all the units that follow, as water is a vital resource without which none of the other physical units could operate. Processes introduced here, such as evaporation and condensation, are fundamental to the whole of physical geography and to some human geography topics.

Outline

The unit covers the functioning of the hydrological, fluvial and human aspects of drainage basins.

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
	To understand hydrology	Hydrology Hydrological cycle	TS To introduce the idea of a system by analogy. Open systems e.g. car, computer, domestic water supply. Closed systems e.g. central heating, air conditioning. The global hydrological cycle – why is it a closed system?	Cambridge International A and AS Level Geography (Nagle and Guinness) Figure 1.1 Page 1 shows the Global Hydrological Cycle
	Knowledge of the global hydrological cycle	System Open system Closed system		
	To understand the distinction between open and closed systems	Components: flows/stores/ inputs/outputs	A Flow diagram - boxes for stores, arrows for flows. Could be completely blank or partially filled in. Same diagram to be filled in by teacher as discussion with class proceeds and they complete their diagrams. Written definition of global hydrological cycle comprising three ideas 1. Closed 2. Water 3. Scale. May or may not contain volumes of water involved. Useful to suggest climatic	

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
<p>1.1 The drainage basin system</p> <p>(a) The hydrological cycle</p> <p>(b) Components of the drainage basin system</p>	<p>An open system Appreciate that it is a spatial unit</p> <p>Know its components - flows, stores, inputs, outputs</p> <p>Understand the links between the components</p> <p>Each component of the system should be developed</p> <p>Remember that the channel is an important store and flow within the basin system</p> <p>Appreciate operation of some of the components e.g. overland flow especially in relation to climatic variations</p>	<p>Watershed Catchment area Precipitation Interception Throughfall Stemflow Runoff/overland flow Discharge Infiltration Throughflow Percolation Baseflow Groundwater Recharge Water tables Springs Evaporation Evapotranspiration Gauging station</p> <p>Saturated overland flow Hortonian or infiltration excess flow</p>	<p>variation in volumes of water.</p> <p>TS Teacher builds up the drainage basin diagram with learners' input</p> <p>A Compile a cross-sectional diagram or flow diagram of a drainage basin. The pictorial version may be easier to appreciate than the flow diagram. Outline of surface, soil, rock, water table could be given or done from scratch. Sun, vegetation, urban areas, water bodies and river channel added. Different colours used for flows, stores inputs and outputs to distinguish them. Learners could be introduced to flow diagram as consolidation.</p> <p>A The component groups of flows, stores, inputs and outputs could be coloured.</p> <p>A Learners write definitions of the processes</p> <p>A Learners write an account of the drainage basin system. The concept of discharge needs to be introduced at an early stage.</p> <p>TS and A Whole group discussion about the details of all the processes at work within the system and factors that influence those processes and the inter-relationships between the processes, e.g. soil moisture affects infiltration capacity, etc.</p> <p>TS Introduce the relationship between infiltration capacity and rainfall intensity is significant in producing different reasons for overland flow. If infiltration capacity is greater than rainfall intensity then the stores will fill before overland flow occurs. This situation is typical of humid climates, e.g. UK. This type of overland flow is known as saturated overland flow. If rainfall intensity exceeds infiltration capacity then Hortonian (or infiltration excess flow)</p>	<p>Cambridge International A and AS Level Geography (Nagle and Guinness) Pages 1-4</p> <p>Figure 1.2 Page 1 shows Drainage Basin Hydrological Cycle</p> <p>Figure 1.5 Page 3 shows Factors affecting Infiltration and Surface Run Off</p> <p>Section 1:1 Activities Pages 3 and 4</p> <p>Past papers June 2010 Question 1 June 2011 Question 6(a)</p>

Syllabus ref.	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
<p>1.2 Rainfall – discharge relationships within drainage basins</p>	<p>To understand how a drainage basin responds to a given input of rainfall</p> <p>Ability to draw a hydrograph (labelled well)</p> <p>Understand the storm (flood) hydrograph</p> <p>The factors that influence the hydrograph of a river</p> <ul style="list-style-type: none"> • Understanding of factors • Knowledge of a range of factors • Understanding the inter-relationships between the factors • Knowledge and understanding of land use changes and their effects on inputs, outputs stores, flows in the drainage basin and hydrographs 	<p>Storm hydrograph</p> <p>Lag time</p> <p>Rising limb</p> <p>Falling limb</p> <p>Peak</p> <p>Baseflow</p> <p>separation line</p> <p>Flashy hydrograph</p> <p>Attenuated peak</p> <p>Land use</p> <p>Rainfall duration and intensity</p> <p>Drainage density</p> <p>Porosity</p> <p>Permeability</p> <p>Aquifer</p> <p>Wetting point</p> <p>Field capacity</p>	<p>flow occurs. The water cannot enter the ground so it runs straight off the surface. This occurs in arid and semi-arid environments where the rain is intense or in areas of impermeable surfaces.</p> <p>TS and A Begin with a theoretical diagram of the storm hydrograph. Label fully including the axes. Give some data and a graph can be constructed.</p> <p>A This could be reinforced by a “living graph” exercise – give learners a basic outline of a hydrograph with a series of explanatory captions which need to be inserted/attached around the diagram. This can be very effective way of promoting discussion of the relative influence of different processes, as well as a possible revision exercise. This could then be developed to look at the effects of different factors.</p> <p>A range of different hydrographs could then be shown as a springboard to discussion about the factors which influence the nature of hydrographs.</p> <p>Drainage basin characteristics: size, shape, drainage density, soil moisture, rock type, slope, vegetation, land use. It is worth emphasising that shape is a factor when area is the same.</p> <p>Attenuated response in elongated basins whereas flashy in round ones.</p> <p>Case studies could be effective in illustrating these general principles.</p> <p>Suggested extension study: Detailed drainage basin morphometry in terms of bifurcation ratios, etc. (This is not essential as it is not specified in the syllabus.)</p> <p>TS Introduce the idea of permeability: ability to</p>	<p>Cambridge International A and AS Level Geography (Nagle and Guinness) Pages 5–7</p> <p>Figure 1.9 Page 6 shows a Simple Hydrograph</p> <p>Question 2 Section 1.2 Activities Page 6</p> <p>Past papers</p> <p>November 2011 Question 1</p> <p>November 2008 Question 1</p> <p>June 2011 Question 6(b)</p>

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
	<p>To appreciate annual hydrographs/river regimes</p>		<p>transmit water and porosity: volume of pore space. The two are linked via the connectivity of the pore space. If the pores are interconnected then the rock/soil may be porous and permeable e.g. sandstone. If the pores are tightly packed water holding is possible but transmission is very slow e.g. clay. Optional - Introduce idea of a pervious rock which is one which is permeable via joints and bedding planes.</p> <ul style="list-style-type: none"> • Clays are porous but not permeable, • sandstones are porous and permeable, • chalk is not as porous as clay and is permeable, • limestone is pervious, but not porous. Analogies can be used like sponges – real and synthetic and sieves. Links to water tables, aeration zone and saturation zone. <p>Study a range of annual hydrographs/river regimes to appreciate the impact of climatic variations on discharge, e.g. comparison of Mediterranean, and, cool temperate, alpine hydrographs can be instructive.</p> <p>The important aspect here is how these factors and combination of factors influence the nature of the response of the river. Therefore they should be studied together with a selection of hydrographs. Develop ideas of how changes in these factors cause different responses and changes to the volumes and nature of the flows.</p> <p>Human activities are a significant factor in influencing hydrographs. It may be useful to include human activities in this section as well in terms of river basin management (1.4). Equally, human activities could be considered in that section only, e.g. land use changes such as deforestation, afforestation, pasture to arable farming or vice versa, dam and reservoir building, urbanisation –</p>	<p>Cambridge International A and AS Level Geography (Nagle and Guinness) Figure 1.8 Page 6 Compares River Régimes</p> <p>Cambridge International A and AS Level Geography (Nagle and Guinness) Table 1.3 Page 7 shows Factors affecting Storm Hydrographs</p> <p>For data on UK drainage</p>

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
<p>1.3 River channel processes and landforms The channel as a system</p>	<p>Dynamic equilibrium</p> <ul style="list-style-type: none"> Knowledge and understanding of channel variables Relationships between the variables <p>Fluvial processes</p>	<p>Gradient of channel bed Load – capacity and competence</p> <p>Discharge Velocity</p> <p>Channel efficiency Channel roughness Capacity Competence Flows - laminar,</p>	<p>concrete surfaces are impermeable hence their inability to transmit water therefore increased surface runoff. Make sure learners can develop a full explanation, rather than assuming that it can be assumed that concrete is impermeable. Water abstraction and water quality should be considered either as part of a relevant case study or in general terms. Depending on the river basin chosen, political factors may be relevant where the river crosses international boundaries.</p> <p>TS In discussion with the group, the basic ideas and concepts can be introduced.</p> <ul style="list-style-type: none"> Revise the concept of a system – inputs outputs, flows, discharge. Idea of moving water because of gradient, therefore energy to carry out work. Ask what the work would be in a channel. Introduce idea of dynamic equilibrium with respect to a river channel, e.g. adjustment of channel bed to transport its load. Suggest that there would be a changing dynamic downstream as a result of a number of aspects of the channel which vary, i.e. variables. What are they and how may they change downstream? Discharge. Define and use as a springboard for discussion of cross sectional area which links directly to hydraulic radius via wetted perimeter. Look at two or three comparative diagrams of cross sectional area. <p>Introduce idea of how variable discharge can influence channel efficiency by changing the level of water in the channel. (This idea will be picked up again in relation to landforms like braided channels)</p>	<p>basins, try the National Water Archive at www.nwl.gov.uk/dj/hydrology/river_flow_data</p> <p>Also hydrology web on http://www.birds.gov.gov/2000/hydroweb.html</p> <p>For rivers and dams, try www.rn.com/basics/ard</p> <p><i>Cambridge International A and AS Level Geography</i> (Nagle and Guinness) Pages 7–15</p> <p>Figure 1:11 Page 8 shows Hjulstrom curve</p> <p>Figure 1:14 Page 10 shows Meander Formation</p> <p>Figure 1:16 Page 12 shows Waterfall Formation and also case study of Niagara Falls</p> <p>Figure 1:18 Page 13 shows Floodplains, Levees and Bluffs</p> <p>Figure 1:19 Page 13 shows Deltas</p> <p>Section 1.3 Activities Page 8, 11, 12 and 15</p> <p>Geofile 529 Sept 2006 River Channels Fieldwork</p>

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
		<p>turbulent, helical</p>	<ul style="list-style-type: none"> The other variables can be discussed once this has been understood, to form the foundations of the succeeding sections on process and form Channel roughness Gradient Velocity Competence Capacity Friction/flow characteristics <p>A To reinforce all these ideas fieldwork or use of a sand bank would be ideal. However if this is not possible then discussion of measurement in the field in theory can aid understanding, e.g. difficulty of measuring discharge in low / high flow conditions. Use of orange peel and cork versus flow meters in terms of accuracy and practicality.</p>	<p>Past papers June 2011 Question 1 June 2011 Question 7(c) November 2011 Question 7 June 2010 Question 7</p>
	<p>Knowledge and Understanding of processes of erosion transportation and deposition</p> <ul style="list-style-type: none"> Direction of erosion 	<p>Abrasion/corrosion Corrosion/solution Hydraulic action as erosion and transportation Traction Suspension Saltation Entrainment Critical erosion and deposition velocity Bed load Solute load</p>	<p>At the outset emphasise that these processes are influenced by the dynamics of the channel, interrelate and produce landforms which will be the next section of the work. Result from the energy possessed by the river. For processes of erosion, most authorities consider that abrasion and corrosion result from the action of the transported load. The load is the tool for erosion. Closest analogy 'like sandpaper'. Assists in undercutting and bank caving. More especially linked to turbulent flow and potholes in river bed. Hydraulic action sheer power of water. Cavitation is the implosion of gas bubbles in turbulent flow causing shock waves and weakening the banks of the channel in particular. Both processes lead to bank caving.</p> <p>Vertical, headward and lateral erosion should be covered, either here, or in connection with landform development.</p>	

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
	<p>Hjulstrom curve – link between process and load</p> <p>The nature of channels</p> <p>Link between process and form</p> <ul style="list-style-type: none"> • Straight • Meandering • Braided <p>Landforms</p> <p>Classification according to processes of formation</p> <ul style="list-style-type: none"> • Erosional forms – waterfalls, gorges • Meander characteristics • Depositional – point bars, floodplains, levées, alluvial fans, deltas 	<p>Floodplain</p> <p>Braided channel</p> <p>Eyot</p> <p>Meander</p> <p>Pool</p> <p>Riffle</p> <p>Flows - laminar, turbulent, helicoidal</p> <p>River cliff</p> <p>Slip-off slope</p> <p>Point bar</p> <p>Waterfall</p> <p>Plunge pool</p> <p>Rapids</p> <p>Gorge</p> <p>Bluff</p> <p>Floodplain</p> <p>Levée</p> <p>Cut-off/ox-bow lake</p> <p>Alluvial fan</p> <p>Delta</p>	<p>Processes of transportation can be done easily by means of one diagram, which shows traction/bed load, saltation, suspension and solution.</p> <p>TS Hjulstrom curve</p> <p>Begin with a diagram of the graph. Emphasise what it demonstrates via the axes of the graph. Explanation can be done by annotating the graph, highlighting critical erosion and deposition velocities in relation to fraction of the load. Reasons why clay particles need such a high velocity when they are such small particles. Distinguish between entrainment and settling location of these curves on the graph. Entrainment (ability of the river to transport material) is the velocity line between erosion and transportation and the settling velocity marks the division between transportation and deposition.</p> <p>TS Use survey maps of Zimbabwe (Victoria Falls) and Port Antonio as teaching tools. Very useful. For meandering channels and floodplain characteristics. Discussion can focus on the contrasts and reasons for the contrasts. Conditions under which each occur, e.g. braided channels found in areas of variable discharge and large loads, whereas gradient variation causes meandering channels.</p> <p>Description, explanation and an example or examples of these landforms is needed. Annotated diagrams can be a useful way of condensing the material. The floodplain with its assemblage of features can be considered as a section of work. This could be a way of creating the link between the geomorphology and the human impact on the physical environment, i.e. the final section of work in this unit.</p>	<p>Geoffie 563, Jan 2008 Deltas</p>

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
<p>1.4 The human impact</p>	<p>Floods</p> <ul style="list-style-type: none"> • Knowledge of causes of river flooding. (The unit is about fluvial processes so examination questions refer to river flooding as opposed to flooding by the sea.) • Understanding of effects. Floods as a hazard • Prediction • Prevention • Amelioration • Management 	<p>Bankfull discharge Overbankfull discharge</p> <p>Recurrence Interval</p> <p>Hard engineering Soft engineering</p> <p>Management strategies – wing dykes, levées, etc.</p>	<p>Flood risk, prediction in terms of measurement like recurrence intervals. (Prediction is often given insufficient attention and it may be examined in its own right).</p> <p>Factors such as global warming and climate change could be covered as factors influencing prediction and management.</p> <p>Inadvertent changes versus management strategies, which are part of possible amelioration, could be considered.</p> <p>TS A case study would be the obvious way. River basin management and river channel management. There are many well-documented examples other than the Mississippi. The use of local examples is encouraged.</p> <p>Hard and soft engineering techniques</p> <p>General principles of physical geography could be the starting point for instance, increasing channel capacity, decreasing discharge and then how the engineering schemes can achieve these objectives rather than just a catalogue of measures. Perhaps the catalogue can be the starting point and learners are asked what the objective is and then a classification can be drawn up.</p> <p>Emphasise the impact of the human activities upon the physical environment rather than the human activities as ends in themselves, i.e. hydrograph changes, modifications to channel and impact on discharges which then result in floods. The case study could include consideration of human use of, and impact on, floodplains.</p> <p>Note: Make sure there is an emphasis in the presentation on channel flow, i.e. volume and velocity. Learners are expected to be able to</p>	<p>Cambridge International A and AS Level Geography (Nagle and Guinness) Pages 15–23</p> <p>Figure 1.29 Page 21 shows Channel Diversions</p> <p>Section 1.4 Activities Pages 17, 18 and 22</p> <p>www.cibc.urolwghjshroyal/flood/deluge.html</p> <p>(Internet websites will provide up-to-date material on the Three Gorges Dam scheme)</p> <p>Past paper November 2009 Question 5(c)</p>

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
			distinguish between flooding and channel flow and appreciate what flooding is, i.e. over bankfull discharge.	

Example scheme of work Paper 2 Physical Options

PAPER 2 Physical Options

Unit 2: Coastal environments

Recommended prior knowledge

As is the case for all the Advanced Geography Options, completion of the Core is expected. The Coastal environments option builds on knowledge and understanding gained in the compulsory core Unit 3 Rocks and weathering.

Context

The focus here is on the links between process and form and the ways in which human activity is impacting upon coastlines. Examples may be taken from any part of the world, but knowledge of coral reefs is mandatory.

Outline

Knowledge and understanding of coastal processes should precede study of the landforms produced by these processes along cliffed and constructive coasts. 2.1 and 2.2 are interlinked in this option as teaching of the relevant process ideally precedes introduction of the landforms. Hence erosional processes precede cliffed coastlines and transportation and deposition precede constructive coastlines. Detailed knowledge of coral reefs is required as is appreciation of the role of human activity in the coastal environment. To exemplify the problems of sustainable management, one or more stretches of coastline may be chosen

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
2.1 Wave, marine and sub-aerial processes	To understand that coasts are the meeting point of land, sea and atmosphere and that all three affect the nature of the coastline To understand the process acting upon the coastline	Wave height, length, frequency, crest, trough Fetch Swash Backwash Constructive wave Destructive wave Wave refraction Sediment cell Hydraulic action	Sections 2.1 and 2.2 are very closely linked such that in studying waves it is sensible to study their impact on beaches or other depositional features. Waves Definition of a wave Waves are oscillation of the water surface. Make the point that the water does not move forward. Wave terminology Wave height, length, frequency, crest and trough. This can be done by means of a diagram.	Cambridge International A and AS Level Geography (Nagle and Guinness) Pages 227–234 Figure 2.1 Page 227 shows Water Movement Figure 2.2 Page 228 shows Wave Terminology Figure 2.3 Page 228 shows

Syllabus ref.	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
	<p>Wave quarrying (cavitation) Corrosion/abrasion Attrition Solution</p>	<p>Formation and size of a wave 1. Wind velocity 2. Depth of water 3. Fetch i.e. the distance that the wind has travelled across the water surface, influences the nature of the wave. Waves possess energy, therefore have the ability to carry out processes.</p> <p>Zones – breaker surf and swash</p> <p>Breaking waves Waves break when the water depth is too shallow to support the whole oscillation.</p> <p>Swash Forward movement of water up the beach.</p> <p>Backwash movement of water down the beach.</p> <p>Relative strength of the two influences the nature of the wave.</p> <p>Constructive waves/swell waves Swash is greater than backwash – large fetch, long wave length, low height, found on low gradient beaches, low energy waves which deposit material.</p> <p>Destructive waves/storm waves Backwash is greater than swash – short fetch, short wave length, high waves and frequency, found on steeply sloping beaches, high energy waves which erode.</p> <p>Low energy coasts High energy coasts</p> <p>Wave refraction – link to headlands and bays. Variations in water depth – deeper water around headlands, concentration of erosion whereas deposition in bays. Wave refraction off the end of a spit – link to deposition and recurved ends of the spit.</p> <p>Relationship between wave type and beach profile Learners should understand the relationship between the two wave types and beach profiles. Explain how beaches may be in a state of dynamic equilibrium because the steeper profile produced by swell waves will cause</p>	<p>Types of Breaker</p> <p>Figure 2.4 Page 228 shows Constructive Waves</p> <p>Figure 2.5 Page 229 shows Destructive Waves</p> <p>Figure 2.8 page 230 shows Wave Refraction</p> <p>Figure 2.9 Page 231 shows Longshore Drift</p> <p>Figure 2.12 Page 223 shows Sediment Cells</p> <p>Section 2.1 Activities Pages 229 and 234</p> <p>www.geography4blinitemal.co.uk is the best website for links. Recommended for all aspects of coasts.</p> <p>www.5-pssal.co.uk also has links.</p> <p>Past papers November 2010 Question 3(a) June 2009 Question 4(a)</p>	

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
			<p>destructive waves which comb material down the beach and may deposit it offshore. This will reduce the gradient of return to constructive waves. Will introduce ideas of erosion, transportation and deposition of material. Beach profiles may show significant variation between the stormy seasons and less stormy seasons due to variations in wave energy and dominant wave type, linked to wind direction.</p> <p>One approach to the study of processes is via the sediment cell. A unit of study which considers a section of coastline in terms of an 'open' system and dynamic equilibrium between erosion and deposition, sources/inputs and sinks/outputs, of sediment. Sources of sediment: weathered cliffs, beach material, offshore bars, river sediment, in-drift of material from adjacent littoral cell, beach nourishment. Sinks: offshore bar, beaches (could be in the form of a spit), sand dunes, out-drift to next sediment cell. Transport along the cell (LSD, longshore drift) current and tidal action within the cell. Cells are ideal units for study of coastal management – link to 2.4 and the landforms in 2.2.</p> <p>Marine processes Waves as agents of Erosion</p> <p>Hydraulic action or impact i.e. the sheer force of the waves exerts a pressure which can be up to 30000kg/sq.m in storms.</p> <p>Wave quarrying (cavitation) is the compression of air in openings in the rocks at the coast as the wave hits. Decompression takes place as the wave recedes. This process weakens the structure and increases surface area for other forms of erosion. Therefore large blocks can be 'quarried' (removed from the cliff face). Also known as quarrying.</p>	

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
<p>2.2 Coastal Landforms of Clifed and Constructive Coasts</p>	<p>To understand that coasts are the meeting point of land, sea and atmosphere and that all three affect the nature of the coastline</p>	<p>Cliff profile Isostatic/eustatic Strata Dip Shore platform Bay Headland Cave Arch Stack Longshore drift Swash Backwash Beach profile Spit (simple and compound Bar Tombolo Sand dunes Salt marsh Estuary</p>	<p>Corrosion/abrasion in which the load carried by the breaking waves acts as a tool, rather like sandpaper, smoothing the rock. Important in producing the notch at the cliff base and in shaping wave cut platforms.</p> <p>Attrition reduction in calibre of the load carried by waves as abrasion occurs between the particles.</p> <p>Solution is active in calcareous rocks like chalk and limestone where carbonation-solution creates soluble material which is carried away by the waves.</p> <p>This section is closely linked to Section 2.1 and so the two parts could well be integrated.</p> <p>Landforms produced due to coastal erosion</p> <p>Clifed coastlines</p> <p>Erosion Evolution of a typical cliff profile: cliff, notch, abrasion/wave cut platform, beach.</p> <p>Cliffs should be studied in profile (cross section) and plan. This is an important distinction which should be known.</p> <p>Form Factors influencing cliff form: i. Sub-aerial processes of weathering and mass movement. Detail about processes e.g. frost shattering, carbonation-solution, hydrolysis – those processes which typify the coast rather than weathering itself. Similarly with mass movement. ii. Lithology and rock structure iii. Isostatic and eustatic changes iv. Human activity</p> <p>Simple form:</p>	<p><i>Cambridge International A and AS Level Geography</i> (Nagle and Guinness) Pages 234–245</p> <p>Figure 2.15 Page 235 shows Caves, Arches, Stacks and Shumps</p> <p>Figure 2.18 Page 238 shows Wave Cut Platforms</p> <p>Figure 2.20 Page 237 shows Factors in Cliff Stability</p> <p>Section 2.2 Activities Pages 236, 240, 241, 242, 244 and 245</p> <p>Figure 2.25 Page 239 shows Beach Deposits</p> <p>Figure 2.28 Page 240 shows Depositional Features</p> <p>Figure 2.31 Page 242 shows Formation of Barrier Island</p>

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
			<p>Vertical cliffs in massive resistant rock, e.g. chalk, limestone, granite.</p> <p>Complex/composite form – Mixed lithology which have undergone rotational slip.</p> <p>Slope over-wall cliffs actively eroded cliff base and a contrasting upper slope of 'dead'/degraded cliff between 5 and 50° which represents past periglacial processes when sea level was lower. Rise in sea level has produced new vertical cliff face.</p> <p>Influence of dip of strata – horizontal, vertical, seaward and landward dipping.</p> <p>Active and inactive cliffs – the latter are dominated by sub-aerial processes.</p> <p>Shore platforms – raised beaches and degraded clifflines, linked to sea level change. Development of spits may lead to degraded clifflines as wave attack is prevented. Annotation of photographs can be a useful exercise. Human activities may be introduced here, e.g. building on cliff tops may be a contributory factor in cliff collapse/rotational slip.</p>	<p>Figure 2.34 Page 243 shows Sand Dune Succession and Figure 2.36 shows Salt Marsh Formation</p> <p>Geo Facisheet 129 The Impact of Structure and Lithology on Coastal Landforms</p> <p>Geo Facisheet Number 145 April 2003 Coastal deposition www.curriculumpress.co.uk</p> <p>Geofile 544 April 2007 Salt marsh Ecosystems</p> <p>Geo Facisheet 160 The Importance of Wetlands</p> <p>Past papers</p> <p>June 2011 Question 3(b)</p> <p>June 2011 Question 4(a) and (b)</p> <p>November 2011 Question 4(a)</p> <p>June 2010 Question 3(b)</p> <p>June 2010 Question 4(a)</p> <p>June 2009 Question 4(b)</p>
		<p>Swash aligned coasts</p>	<p>Headlands and bays and their relationship to lithology along a section of coast. Plan and headland profile: evolution of landforms produced due to erosion on the headland (deep water, wave refraction, concentration of erosion on the headland: caves, arches, stacks).</p> <p>Deposition: Having considered headlands and focused on erosion, the logical progression is into bays, and deposition, shallow water and breaking waves.</p>	
		<p>Drift aligned coasts</p>	<p>Marine processes</p> <p>Transportation the direction of movement is related to direction of the prevailing wind and direction faced by the</p>	

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
			<p>coast. Material may be carried up and down the beach if the prevailing wind is at right angles to the coast, or along beach if the wind approaches at an oblique angle.</p> <p>Longshore drift (LSD) Longshore currents may be important in bays where wave refraction is significant.</p> <p>Deposition If swash is greater than backwash – beaches are constructed/built up and if longshore drift is taking place then beaches are built along the shore.</p> <p>Coastal landforms of constructive coasts</p> <p>Beaches should be studied in profile (cross section) and plan. Gradient, variation in calibre of material from cliff to low tide, storm beach, berm, offshore bar. Relate back to wave type – constructive/destructive and swell and storm profiles, 2.1.</p> <p>Micro-features – ripples, cusps, runnels. Formation of these features and understanding of processes operative to produce these small features.</p> <p>Beaches that develop due to longshore drift: Spits</p> <p>Simple spit is a fairly long narrow straight ridge of sand shingle with one end attached to the mainland and one end in open water.</p> <p>Compound spits which have laterals/recurved laterals. Evolution of spits.</p> <p>Bars A bar has both ends attached to the mainland. Usually has a lagoon behind it, e.g. Slapton Sands and Slapton Ley (lagoon behind the bar), Devon, UK.</p> <p>Offshore bars and relationship to spits and longshore</p>	

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
2.3 Coral reefs	To understand the formation, characteristics and distribution of coral reefs, along with the necessary conditions for coral growth	<p>Coral polyp Symbiotic relationship Algae Fringing reef Barrier reef Atoll</p>	<p>drift, e.g. Chesil beach, Dorset, UK, in which offshore material deposited during the Pleistocene has moved inland as a result of the Flandrian transgression (post glacial rise of sea level).</p> <p>Tombolos</p> <p>Barrier islands relationship to offshore bars.</p> <p>Coastal sand dunes –formation, form and plant succession in relation to stabilisation of the sand.</p> <p>Estuaries – deposition, mudflats.</p> <p>Salt marshes may be considered in relation to spills and tidal sedimentation in estuaries. Plant succession is so far as the vegetation stabilises the sediment.</p> <p>Throughout links can be made to 2.4. Human activity is relevant and important in influencing the stability and long term nature of these landforms. Depositional landforms in particular are unstable and fragile environments.</p>	<p><i>Cambridge International A and AS Level Geography</i> (Nagle and Guinness) Pages 245–250</p> <p>Section 2.3 Activities Pages 247 and 250</p> <p>Figure 2.37 Page 247 shows World Distribution of Coral Reefs</p> <p>Figure 2.38 Page 247 shows Fringing Reefs, Barrier Reefs and Atolls</p>
			<p>Formation and development Understanding of a coral polyp - a single organism living in a symbiotic relationship with zooxanthellae/algae. Ability of coral to build reefs by production of calcium carbonate. Reef form related to algal variety. This is necessary basic understanding, although questions are likely to focus on reef form and theories of formation</p> <p>Conditions for growth of coral:</p> <p>Temperature 23–25°C Water depth less than 25m but not exposed to air Light for photosynthesis Salinity required Clean, clear water sediment free</p>	

Syllabus ref	Learning objectives	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
			<p>Well-oxygenated water produced by strong wave action</p> <p>Global distribution of coral Tropical seas between Tropics of Cancer and Capricorn</p> <p>Offshore, on eastern and western continental and island margins.</p> <p>Forms of reefs Fringing; barrier; atolls. Demonstrates links between the three forms.</p> <p>Theories of formation Darwin, Daly and Murray.</p> <p>Darwin is the best documented and demonstrates the evolution from fringing through barrier to atoll. Limited spatial application. Will include causes and effects of sea level change on reefs – may link directly to human activity. Coral reefs would be an excellent example to use for sustainable management of a section of coastline, see 2.4. However, alone, a reef cannot exemplify all the aspects of human impact which require study, so it needs to be used in addition to one or more other case studies.</p>	<p>Geofile 519 April 2006 Coral Reefs</p> <p>Past papers June 2011 Question 3(a) November 2011 Question 4(b)</p>
<p>2.4 Sustainable management of coasts</p>	<p>To acquire in-depth knowledge and understanding of one coastal environment, focusing on:</p> <ul style="list-style-type: none"> its location – use of sketch maps. The issue affecting sustainability. the strategies employed to increase sustainability the relative success of those strategies (i.e. positive and negative 	<p>Sustainability Coastal protection Hard engineering Soft engineering</p>	<p>One stretch of coastline This should be of manageable length i.e. not the whole south coast of the UK. A littoral cell is a useful unit for study. Ideally it includes both cliffs and depositional features resulting from longshore drift. Consideration of balance between natural processes and human influences. Management strategies.</p> <p>Coastal protection measures Hard and soft engineering, integrated planning e.g. SMPs (Shoreline Management Plans), government policy, managed retreat 'do nothing'. Conflicts and local issues which may arise. Cost-benefit analysis of alternative protection measures. Sustainable management may involve more than coastal protection, i.e. zoning of human</p>	<p><i>Cambridge International A and AS Level Geography</i> (Nagle and Guinness) Pages 250–260 including case studies</p> <p>Geo Factsheet Number 141 Holderness Coast (UK) A study of coastal management www.curriculum-press.co.uk</p> <p>Past papers November 2011 Question 3(b) June 2010 Question 4(b) November 2010 Question 4(b) June 2009 Question 3(b)</p>

Syllabus ref	Learning objectives (aspects)	Terminology	Teaching strategies (TS) and activities (A)	Learning resources
			<p>activities, marine reserves, limits on fishing.</p> <p>A range of case studies may be considered more appropriate which illustrate particular threatened landforms e.g. coral reefs, spits, salt marshes (see below). However, ideally, learners should appreciate the balance of processes along a section of coastline and be able to evaluate the advantages and disadvantages of the possible solutions, which may involve both physical protection and human utilisation of a stretch of coastline. A coral reef coastline may not offer sufficient coverage of all aspects of this unit so that, whilst it exemplifies a coastal area under threat, the range of landforms is somewhat restricted and it is advisable to consider examples of other stretches of coastline, too.</p> <p>Note: Be careful about the use of textbook case study material which may not be familiar to the learner. Start with a well labelled map so that they have a spatial context; try to find photographs as well. Maps can be a useful and time-saving means of describing a coastline provided the detail is included.</p>	

Example scheme of work Paper 3 Human Options

PAPER 3 Human Options

Unit 2: Environmental management

Recommended prior knowledge

It is not essential, but learners who have studied Cambridge O Level/IGCSE® Geography, Natural Economy or a Science subject are likely to have some knowledge of the basics of energy and power supplies.

Context

There will be some linkage to the material studied in the AS Physical Core, Unit 2.4, regarding the human impact on the environment: urban effects on climate, particularly pollution. In addition, AS Human Core, Unit 3.2 Urban trends and issues of urbanisation, may have looked at the difficulties of upgrading parts of urban areas, in terms of dealing with pollution, etc. This unit will take the topic further by looking at and evaluating the success of possible solutions to the problems.

Outline

This section is divided into two discrete but inter-related sections: energy supplies and environmental degradation.

This unit will examine the patterns of supply and demand for different energy resources, and the factors that encourage or limit their development/exploitation. It will examine both renewable and non-renewable resources and the environmental impacts resulting from their exploitation. Case studies of the development of different energy sources will illustrate the issues raised. The distribution of power sources is geographically uneven, necessitating the formulation of energy strategies by local and national governments to ensure the best possible exploitation/procurement of their energy needs, with the least harmful impact on the physical environment. Exploitation of other natural resources may contribute to the economic wellbeing of an area, but may also produce undesirable environmental consequences. There is a need for the development of strategies to combat the effects of over-exploitation of natural resources in rural areas, and the effects of industrial and urban growth in urban areas. The solutions are not always successful. A key expansion of content in the revised syllabus is water resources and water quality (2.3).

Syllabus ref	Learning objectives	Terminology	Suggested teaching activities	Learning resources
2.1 Sustainable energy	To understand the differences between	Sustainability Renewable energy Non-renewable	Classification of resources: renewable and non-renewable. Facts and statistics for energy use can be taken	Cambridge International A and AS Level Geography (Nagle and Guinness) Pages 361–374 covers

Syllabus ref	Learning objectives	Terminology	Suggested teaching activities	Learning resources
<p>supplies</p>	<p>renewable and non-renewable energy resources</p>	<p>energy budget Energy fuels Hydro-electric power (HEP) Solar energy Biofuels Tidal power Wind power Nuclear power Technology</p>	<p>from an atlas.</p> <p>Analysis of trends in use of energy should be a starting point e.g. energy demand and supply in a country in 2005 and 2020. It is important that there is detail about each of the sources of energy in this section. Focus on a particular source of energy – requirements for production, location, contribution to energy budget, etc.</p> <p>Suggested case studies: USA – energy alternatives for the future Wind farms in Europe – a topical issue.</p>	<p>Section 2.1</p> <p>Geo Factsheet 76 Sept 1999 – Geothermal Energy</p> <p>Includes items on nuclear energy and the greenhouse effect; www.iuc.com.au/education.html</p> <p>Past papers Section 2.1 Questions: November 2011 Question 3(a) June 2010 Question 3(a) November 2010 Question 3</p>
<p>To understand why levels of supply and demand for energy resources vary at the national level</p>	<p>Demand Supply Resource endowment Technology Energy gap</p> <p>Factors that influence energy policy e.g. level of development, capital, energy policy, environmental concerns, Kyoto targets, etc.</p>	<p>This section is focused on supply and demand and the relationships between them.</p> <p>Maps and statistics can be studied to show that the main producers of energy are not necessarily the main consumers.</p> <p>Local case studies are encouraged and often highly effective.</p>	<p>Table 2.1 Page 362 shows Factors Affecting the Supply of Energy</p>	
<p>To examine trends in the patterns of energy consumption in</p>		<p>A good starting point is graphs and data. Relate to changes in technology. Trends in consumption. Comparison of statistics for present demand/ supply and future demand/supply, e.g. for 2005 and 2020. Possible comparison of</p>	<p>Figure 2.7 Page 372 shows Primary Energy Consumption</p>	

Syllabus ref	Learning objectives	Terminology	Suggested teaching activities	Learning resources
	LEDCs and MEDCs		LEDCs and MEDCs. This could be picked up as part of the case study (2.2).	
	To understand the environmental impact of energy production, transport and usage at the local scale	Environmental impact Natural environment Pollution Degradation Conservation	<p>All energy production has some environmental impact (including renewables). Fuel extraction and electricity production create industrial waste, transport may spill crude oil, etc. This can be demonstrated by use of case studies e.g. Exxon Valdez oil spill or the Trans-Alaska pipeline which has great effects on the natural environment. Nuclear energy has distinct actual and potential impacts locally which may impact wider areas e.g. Chernobyl.</p> <p>Note: impact on people (human impact) is not needed.</p>	<p>Global warming: www.ck12.org</p> <p>Other links on this website explore alternative energy sources and their effects.</p>
	To understand the environmental impact of energy production, transport and usage at the global scale		<p>Data of carbon dioxide emissions and levels of deforestation can be analysed, considering 'Carbon sinks', and a link made to Tropical environments, Physical Options Unit 1. Could compare burning fossil fuels with nuclear energy, which may be seen as "clean" but has other possible dangers.</p>	<p>www.ajic.com.au/education.htm deals with Australian uranium</p> <p>Cambridge International A and AS Level Geography (Nagle and Guinness) Pages 373 and 374 offer case studies</p>
2.2 The management of energy supply	To examine and evaluate the supply of electrical energy in one country at two scales 1. Overall energy strategy (national) 2. Named, located energy scheme (local)	Demand Supply Energy gap Production Location	<p>One case study is sufficient as long as it covers both scales, e.g. of Zimbabwe and Kariba (HEP). Teachers may develop more than one case study, e.g. the home country and a contrast (LEDC or MEDC).</p> <p>It is anticipated that the scheme studied will be from the same country as the strategy, to offer greater detail and depth.</p>	<p>Cambridge International A and AS Level Geography (Nagle and Guinness) Pages 374–376 Case Study of China</p> <p>Past papers November 2011 Question 3(b) June 2010 Question 3(b)</p> <p>Geo Facisheet 95 April 2000 UK Energy – Update</p>

Syllabus ref	Learning objectives	Terminology	Suggested teaching activities	Learning resources
<p>2.3 Environmental degradation</p>	<p>To understand the nature and causes of the many types of pollution</p> <p>To distinguish pollution from environmental degradation</p>	<p>Environmental degradation</p> <p>Land pollution</p> <p>Air pollution</p> <p>Water pollution</p> <p>May also include:</p> <p>Noise pollution</p> <p>Visual Pollution</p>	<p>Industries in all four sectors can pollute land, air and water.</p> <p>Definition, classification and causes and sources of pollution as an introduction. Can use spider diagram to brainstorm the topic. Add water as a resource to the discussion. Could link to AS Unit 1 Hydrology through water quality, abstraction, etc. Could Physical Options, Unit 4 Arid and semi-arid environments.</p>	<p>Cambridge International A and AS Level Geography (Nagle and Guinness) Pages 378–392 cover Section 2.3</p> <p>Past papers</p> <p>June 2010 Question 4(a)</p> <p>November 2010 Question 4</p>
	<p>To analyse the factors which have led to degradation of rural environments</p> <p>Causes and consequences of misuse or overuse of rural land</p>	<p>Population pressure</p> <p>Soil erosion</p> <p>Land degradation</p> <p>Deforestation</p> <p>Desertification</p> <p>Poor farming practices</p>	<p>Degradation of rural environments occurs in both MEDCs and LEDCs.</p> <p>Suggested case study from home country or any context which learners can readily understand.</p>	<p>Question 4 November 2011 – Land Degradation</p>
	<p>To examine and evaluate policies designed to improve the quality of degraded rural environments</p>	<p>Reclamation</p> <p>Land reform</p> <p>Soil conservation</p> <p>Afforestation</p> <p>Environmentally Sensitive Areas (ESAs)</p> <p>Waste disposal</p>	<p>Case study – Basilicata, Italy, is a very good, up-to-date case study to use.</p>	<p>www.dastrio.it/it/risorse/tesebancarel/Doc_view/322-highlights-conclusions-rendina-study-site Rendina study site, Basilicata, Italy</p>

Syllabus ref	Learning objectives	Terminology	Suggested teaching activities	Learning resources
	To understand why selected urban environments have become degraded	<p>Urbanisation Urban decay Zones of discard and assimilation Inner city Informal settlement Waste management – solid, liquid, gas and particulates</p>	<p>Case study 1 – The problems of the city of Rome, Italy Case study 2 – Cairo, Egypt: Africa's largest city Case study 3 – American Cities Case study 4 – The quality of life in cities Case study 5 – Urban redevelopment in Glasgow, UK</p> <p>Note: Teachers may want to compare one MEDC and one LEDC city but this is not necessary.</p>	
	To understand the relative success or failure of policies designed to address urban environmental degradation	<p>Urban regeneration Urban redevelopment</p>	<p>Case study 6 – inner city areas Case study 7 – São Paulo, Brazil Case study 8 – London Docklands</p> <p>Case studies are a matter of individual choice.</p>	<p>Geo Factsheet 12:1 January 2002 Urban Problems in Rio de Janeiro</p>
	Knowledge of risk factors affecting environmental protection policies and their impact	<p>Examples may include: National Parks Nature reserves Mining agreements Tropical rainforest (TRF) Ecotourism Earth summits Kyoto protocol CO₂ emissions targets</p>	<p>Identifying Risk factors: general risk factors e.g. population pressure and specific risk factors (to time and/or place) e.g. road building project. Awareness of the need for some form of environmental protection. Measures: proposed or taken. Outcomes: relative success/failure, Unexpected effects, further needs, etc.</p> <p>Study of the Earth summits of Rio de Janeiro 1986 and Kyoto 1997 and the targets of the Kyoto Protocol. Possible link back to AS Unit 2 Atmosphere and weather, 2.4 The human impact</p>	

Syllabus ref.	Learning objectives	Terminology	Suggested teaching activities	Learning resources
<p>2.4 The management of a degraded environment</p>	<p>To acquire detailed knowledge of <i>one</i> degraded environment</p>	<p>Factors that cause and influence degradation: economic, social, environmental, political. Positive and negative.</p>	<p>This section may be covered by reference to any case study of a teacher's or learner's choice.</p> <p>Factors, causes, problems, issues, management strategy, attempts or initiatives, and relative success or failure are the key elements.</p> <p>Note: Ensure that the chosen case study has all the attributes needed. It is advisable to check the wording of past questions in order to select a case study that fulfils the question requirements.</p>	<p><i>Cambridge International A and AS Level Geography</i> (Nagle and Guinness) Pages 392–396</p> <p>Geo Facisheet 91 April 2000 Cardiff Bay Redevelopment, UK</p> <p>Past paper June 2007 Question 4(b)</p>

Sample lesson plan 1: The Demographic Transition Model

Teacher's Name:

<p>Subject: The Demographic Transition Model</p>	<p>Year Group / Set: 12</p>	<p>Date: Nov 2012</p>	<p>Time: 8.10–9.30am</p>	<p>Venue: Geog Room</p>
<p>Lesson Objectives:</p> <p>To know and understand how the demographic transition model can be used to show changes in birth and death rates over time and how relevant it is today?</p>		<p>Learning Outcomes / Success Criteria</p> <p>To be able to describe the stages of the demographic transition model and produce a fully annotated diagram To be able to explain the changes in birth and death rate at each stage of the model using named examples of countries. To be able to evaluate the model in terms of merits and limitations and its applicability to present day</p>		
<p>Context:</p> <p>The learners have learned about population growth including population pyramids. Future learning will consider ageing populations.</p>	<p>Resources</p> <p>Teacher presentation on Demographic Transition model Video clip Card sorting starter Living graph Demographic Transition Model diagram Examples and population pyramid example sheet RAG cards A4 L activity and model answer Nagle and Guinness Pages 96–98</p>			
<p>Introduction (including key questions)</p> <p>Video clip relating to population growth to be used as a hook. Key word card sort to recap geographical terminology relating to population change. Feedback on key word starter. Introduce objectives and explain outcomes Question and Answer session to recap prior learning and introduce concept of a model.</p>			<p>Organisation (grouping etc)</p> <p>Card sorting activity in pairs Living graph in similar ability groups Presentation task in groups with lead learner</p>	

Sample lesson plan 1 (continued)

Main activities (including differentiation)

Learners complete a thinking skills activity – living graph of the Demographic Transition model. Learners work in groups to place statements on the correct place on the graph. Learners work in ability groups and statements provided can therefore be differentiated to match the ability of the learners. Feedback from the thinking skills activity and mini plenary to show progress against outcomes.

Learners use resources provided included teacher Powerpoint presentation to label and annotate a diagram of the Demographic Transition Model to explain what happens at each stage. Learners have time to discuss and note ideas for Questions 2, 3 and 4 on Page 98 Nagle and Guinness.

Learners are placed into groups and given two different countries with matching population pyramids. Learners have to match the country and the population pyramid to the appropriate stage of the Demographic Transition Model and justify their choice. Learners feed back to the rest of the group who take notes from the presentations. Attach a lead learner to each group for this task. Learners could have different roles within the group to facilitate learning – for example, chair for discussion and spokesperson. Mini plenary to review progress against outcomes.

Assessment for Learning Activity: set a past examination question based on the Demographic Transition Model and provide a model answer and a copy of the mark scheme. Ask learners to award the answer a grade, highlight its strengths and suggest areas for improvement. Learners can then work in pairs to compare their ideas and the activity can be followed up with a whole class discussion about the model answer. Set homework task.

Whole class discussion – what are the merits of the model and limitations? How can it be applied to today? Learners write a summary table based on the discussion.

Plenary

Hot Seating activity – learners set questions based on what they have learned in the lesson and one member of the class volunteers to take the hot seat to answer the questions.

Homework

Past questions. Note taking on Pages 96-98. Update key word glossary.

Any targeted support
None

Challenge/Extension/Personalisation
Differentiated living graph
Use of lead learners
Extension: Question 6 Page 98

Assessment opportunities
Card sort, living graph, completed questions, past question

Sample lesson plan 2: Introducing Plate Tectonics

Teacher's Name:

<p>Subject: Introducing Plate Tectonics</p>	<p>Year Group / Set: 12</p>	<p>Date: Oct 2012</p>	<p>Time: 9.35–10.55am</p>	<p>Venue: Geog Room</p>
<p>Lesson Objectives: To know and understand the structure of the Earth and how the crust is divided into plate boundaries</p>		<p>Learning Outcomes / Success Criteria: Learners will be able to identify the layers of the Earth and describe them using key geographical terms Learners will annotate a map to show plate boundaries and use this to identify examples of plate boundaries Learners will be able to examine the evidence for plate tectonics and explain how plates move</p>		
<p>Context (e.g. third lesson in a set of five) This is the first lesson on plate tectonics. It is an introductory lesson. Learners will go on to examine different types of plate boundary.</p>	<p>Resources Movie starter Learning station resources Structure of Earth diagram and note taking grid Map from Memory and plate boundary map Plate Tectonic Detectives resource sheets</p>			
<p>Introduction (including key questions) Powerpoint presentation of images showing what happens at plate boundaries as a hook. Learners identify what is happening in the images and try to suggest what they have in common as the starter activity. This will be revisited later in the lesson. Share outcomes and objectives and review any previous learning.</p>		<p>Organisation (grouping etc) Learning stations and carousels Thinking skills activity – group work Detectives – paired work</p>		

Sample lesson plan 2 (continued)

Main activities (including differentiation)

Learning stations are set up with information relating to each layer of the earth. Learners move around the learning stations as a carousel and note key points. Whole class feedback. Learners label diagram showing structure of the earth and complete note taking grid to describe each layer using feedback and teacher presentation. Review outcomes and complete mini plenary. Extension activity for more able learners – the answer is but what is the question – learners are given a key word and write a question that would give that key word answer.

Introduce and define key terms – plate and plate boundary.

Thinking skills activity – learners work in groups to reproduce a map showing the plate boundaries – map from memory activity. Learners are then given plate boundaries map and have to identify examples of where plates are moving apart, together and side to side using names of plates. Revisit outcomes and mini plenary.

Plate Tectonic Detectives - learners have a variety of resources to interpret in order to investigate and present the evidence for the theory of plate tectonics. More able learners have a greater variety of resources to respond to making the task more complex and less able learners might have prompt questions to guide them. Examples of resources could be map showing distribution of earthquakes, jigsaw map of the continent, fossil evidence etc. Learners feed back on their findings and write a brief summary for the evidence for plate tectonics. Complete Question 1 Page 58 Guinness and Nagle.

Teacher presentation on the theories of plate movement – learners complete note taking grid and write a summary of the different theories.

Revisit starter questions and revise answers based on the content of the lesson.

Plenary

Just a minute – a learner has just a minute to talk about what they have learned in the lesson. This is then passed on to another learner to add further points and develop until the teacher feels the lesson content has been summarised.

Homework

Extra notes from Pages 55–59 Nagle and Guinness.
Research the different types of plate boundary ready for next lesson.

Any targeted support

Challenge/Extension/Personalisation

The answer is ..what is the question?
More complex resources for Plate Tectonic Detectives
Just a Minute – more able learners are used later in the activity to add challenge

Assessment opportunities

Completed diagram and grid
Learner summary
Question 1 Page 58

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