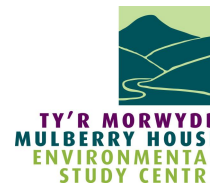


FIELDWORK EXERCISE SUMMARIES GEOGRAPHY AS AND A2



Hydrology – Downstream Changes on a River

An investigation of downstream changes in channel, bedload and valley characteristics, and the correlations between them. Rivers which may be studied include the Caerfanell and the Honddu, which flow through some of the finest scenery in the Brecon Beacons National Park.

Fieldwork involves the following measurements at a number of sites: width, depth, wetted perimeter, velocity, gradient, bedload size and shape, and Manning's 'n'. At each site valley shape and fluvial landforms are identified and discussed, and may be recorded with the aid of annotated field sketches. O.S. maps are used as secondary sources of information.

Follow-up work involves the calculation of cross-sectional area, discharge and hydraulic radius, and the drawing of cross-section diagrams to scale. Scattergraphs and statistical analysis (e.g. Spearman Rank and Chi-Squared) can be used to assess the significance of trends in the data.

Hydrology and Brecon Flood Study

This exercise looks at the causes and effects of flooding by the River Usk of areas of Brecon in 1979 and the measures taken to try to prevent a recurrence/reduce the effects of flooding in the future. To help in the understanding of the fluvial processes involved in flooding and its prevention, measurements are taken of a natural river channel. The river studied is the Caerfanell, a tributary of the Usk that flows through some of the most spectacular scenery in the Brecon Beacons.

The fieldwork involves the following measurements at two contrasting sites, one near the source and the other further downstream: width, depth, wetted perimeter, gradient, velocity, bedload size and shape, Manning's 'n' roughness, landscape evaluation. Additional note is taken of topography, landscape/river features, vegetation, with opportunities for field-sketching. In the afternoon the Brecon Flood Alleviation Scheme is visited and its features identified and discussed in the light of possible alternatives.

Follow-up work involves the collation of primary data and the calculation of cross-sectional area, discharge and hydraulic radius. The results are then discussed and used to help to explain the river channel characteristics of the Brecon Flood Alleviation Scheme.

Coastal Erosion and Management: Glamorgan Heritage Coast

Inherent geological conditions, rising sea levels and conservation issues combine to produce management problems at Col Huw, on the Glamorgan Heritage Coast. Here, Liassic limestone cliffs and a relic pleistocene delta are the focus of both wave energy and visitor pressure, resulting in the need for a decision between engineering or more "natural" solutions.

Fieldwork includes a detailed assessment of the structural and lithological characteristics of the Liassic limestone cliffs. Historical evidence is used to assess rates of erosion, and landscape assessments and questionnaire surveys to help evaluate the alternative solutions.

Use of secondary data includes engineering reports, Heritage Coast information and old maps.

Follow-up work involves the collation of data and evaluation of the situation to date, leading to either the presentation of a report or a role-play exercise to debate the issues involved and the decisions to be made.



Geology, Soils and Vegetation

An investigation of the interrelationships between soils, relief, drainage and natural vegetation on the Bloreng. A short transect is followed across coal measures quartzites, clays and carboniferous limestone, revealing humus-iron podsols, peaty gleys and immature calcareous brown earths.

The fieldwork involves taking samples at each site and producing annotated sketch profiles of the soils. This activity makes a good half day exercise, run in conjunction with a study of plant succession on the nearby coal mine spoil heaps at Pwll Du

Follow-up work involves laboratory analysis of the samples for pH, texture and moisture content, and the class results are tabulated to provide a good case study.

Woodland Management and Conservation

This is a biogeographical exercise investigating the important issue of the impact unrestricted grazing has on the structure, diversity, conservation value and long-term future of deciduous woodland.

Students conduct an ecological survey of grazed and ungrazed areas of semi-natural ancient woodland in the Brecon Beacons National Park. An area of forestry plantation may also be studied for contrast.

The fieldwork consists of random quadrat sampling of the ground and field layers, a tree regeneration survey and measurement of soil pH and microclimate. This may be followed by a visit to an ancient semi-natural deciduous wood owned by Gwent Wildlife Trust, serving as a valuable case study of active woodland management for conservation.

Follow-up work involves collation of primary data, graph work, etc., leading to class discussion and analysis of results.

River Pollution Study

The rivers of the South Wales Valleys rise on unspoilt uplands, but thereafter flow through a series of industrialised and urbanised areas. The exercise investigates the impact of such catchment land-use on the river ecosystem in terms of both biodiversity and water quality, using techniques adapted from those used for monitoring by the Environment Agency. Once learned, most of these can be easily used by students anywhere else in Britain.

Fieldwork includes kick sampling in a variety of river-bed micro-habitats to discover the range of invertebrate species present at a number of sites down the catchment. At each site the water is analysed for its dissolved oxygen content, pH, temperature and turbidity.

Follow-up work involves the calculation of biotic index values for each site, which together with the abiotic data collected allow interesting conclusions to be drawn regarding the impact of human activity, the problems of identifying its sources, the widespread nature of such problems in Britain and elsewhere, and the ability of rivers to recover from damaging inputs.



Water and Landscapes: Limestone Study

This is a study of solutional processes and the landforms resulting from them in the Ystradfellte area of the Brecon Beacons National Park.

Fieldwork includes interpretation and field sketching of karst landforms, including a spectacular dolina and major sink/resurgence at Porth yr Ogof. The discharge and calcium carbonate load of the Afon Mellte, which sinks at Porth yr Ogof, are measured with the use of flowmeters, etc., and simple titration.

Follow-up work involves an estimation of the total solution load of the Mellte and long-term rates of surface lowering.

Ice and Landscapes: Glaciation Study

The Brecon Beacons and Usk Valley contain much evidence of the Pleistocene, and a fieldwork day can vary in its content to suit preferences.

Typically the day includes a walk into either Cwm Llŵch or Cwm Cerrig Gleisiad, both of which are major cirques, to sketch and/or morphologically map the main erosional and depositional features. These include well-preserved cirque moraines dating from the Loch Lomond Re-advance. Below the cirque, the Nant Cwm Llŵch has eroded river cliffs into deposits. Fabric analysis of these is carried out to determine their likely origin – either glacial or peri-glacial.

If time permits, visits can be made to see an excellent overflow channel now occupied by the Usk above Brecon, a superb recessional moraine with kame and kettle features near Abergavenny, and a kame terrace at Glanus. Other features can be noted en route.

Follow-up centres around presentation (rose diagrams) and statistical analysis (Chi squared) of the fabric analysis data.

Primary Succession on Colliery Spoil

Derelict land on mining spoil heaps is a legacy of the area's industrial past and once occupied large areas of the South Wales coalfield. Whilst most have now been reclaimed, a large area above Blaenafon remains unaltered, and provides an excellent opportunity to examine the process of primary succession.

Areas of three different ages have been identified, dating from the industrial revolution to post World War Two. Detailed investigation of the vegetation composition is carried out in three areas, using random quadrat sampling.

Follow-up analysis of the results reveals distinct vegetation communities with changing species composition and diversity, culminating in a moorland plagioclimax. The Chi squared test and Simpson's Index of Diversity can be used to strengthen the analysis.

Primary Succession on Sand Dunes

Similar work to the above is carried out on the dune-fringed Glamorgan coast at Crymlyn Burrows or Oxwich. Here, systematic sampling by means of a transect is used to show the full primary succession from embryo dunes to woodland. Quadrat analysis is accompanied by sampling of abiotic (especially edaphic) variables.

Follow-up analysis is as for the colliery spoil investigation, and can include correlation tests and soil analysis for pH, moisture content and organic content.



Abergavenny Town Study

Abergavenny is a rural market town with a wide sphere of influence. As such it forms an ideal case study for 'key' ideas in urban and rural geography. The exercise involves hypothesis-testing and a wide range of fieldwork techniques are employed.

The day is divided as follows:-

- 1) Transects of the main routes from the edge to the centre of Abergavenny are followed, plotting land-use and environmental quality at regular intervals.
- 2) CBD study involving: Goad mapwork, shopping area surveys, environmental quality surveys, pedestrian counts, traffic counts, car park and public transport surveys and questionnaires.

Use of secondary data includes historical information, Local Authority plans & Census figures.

Follow-up work involves collation of primary data, graph work, land-use mapping, etc., with class discussion and analysis of results.

Further work using the data collected could include pie-charts, isoline/choropleth maps, flow maps, Spearman's Rank Correlation.

Village Development Study

This exercise compares two villages close to Abergavenny. One is just outside the Brecon Beacons National Park and the other is just within its boundary. Comparisons involve: effectiveness of planning policy, land-use composition and layout, extent and effects of development, desirability of planning controls and the degree of "suburbanisation".

Fieldwork involves: detailed housing surveys, amenity surveys, questionnaires, Development Land Constraint surveys, village "Townscape" assessments, environmental quality surveys, land-use mapping and a wide range of general observations, e.g. location, site, form, employment.

Use of secondary data includes planning documents such as the Gwent Structure Plan, Monmouth Borough Local Plan and the Brecon Beacons National Park Plan.

Follow-up work involves collation of primary data, graph work, land-use mapping, etc., leading to group presentations to analyse the findings, with proposals for future development policy.

Rural Settlement Study

This exercise studies the relationship between population size and service provision and prosperity of small rural settlements. It involves hypothesis-testing by comparing a number of villages in the Brecon Beacons National Park.

Fieldwork involves: service provision, housing and environmental quality surveys, land-use mapping and a wide range of general observations, e.g. location, site, employment, tourism.

Use of secondary data includes historical information and Census figures.

Follow-up work involves collation of primary data, graph work, land-use mapping, Spearman's Rank Correlations, etc., in preparation for group presentations to analyse the findings.

Local Issues on the Urban-rural Fringe of Abergavenny

This exercise looks at present land-use on the edge of Abergavenny, proposals for future land-use changes and their potential impact, changes that have recently taken place and their effects, and an assessment of local reaction to proposed and recent changes. Hypothesis-testing is used to analyse a number of general assumptions.

Fieldwork evidence is collected as follows: land-use mapping, environmental quality surveys, environmental impact assessments for proposed development sites, evaluation of the suitability for modern development of these sites, traffic counts, Goad mapwork of the CBD, shopping area and car parking surveys and questionnaires.

Use of secondary data includes detailed summaries of the development proposals, local planning documents, newscuttings, historical information and Census figures.

Follow-up work involves collation of primary data, graph work, land-use mapping, flow maps, etc., with class discussion to analyse results. An alternative could be group presentations.

The Social, Environmental and Economic Impact of Industrial Change in Ebbw Vale

With the closure of its coal mines and steelworks Ebbw Vale has suffered economic decline and faced the challenge of trying to reverse this process. The main objective of this exercise is to identify the various effects this has had on the local community and environment. Also included is hypothesis-testing of the factors affecting decisions about industrial location.

The fieldwork involves: environmental quality surveys of industrial sites of various ages that are in different stages of disuse/reclamation/redevelopment, evaluating the suitability of these sites for modern industrial development, Goad mapwork of the CBD, a detailed survey of a modern industrial estate, and collection of data relating to general economic indicators, e.g. house prices, availability of employment, upkeep of the town.

Use of secondary data includes historical information, newscuttings and Census figures.

Follow-up work involves collation of primary data, graph work, land-use mapping, etc., in preparation for group presentations to analyse findings.

Industrial Location Simulation Exercise

This is a decision-making exercise to choose between Ebbw Vale and Abergavenny as the best location for a new industrial development, and then the best site within the chosen location (choice of three in each location). This links in with established industrial location theories.

The fieldwork involves: bipolar surveys of the environmental quality and the suitability of the alternative sites for modern industrial development, recording of important site and location factors, Goad mapwork of both CBDs, and collection of data relating to general economic indicators, e.g. existing industry, house prices, training & educational provision, leisure facilities.

Use of secondary data includes historical information, the role of the respective local authorities and the Welsh Development Agency, the impact of Garden Festival Wales, and Census figures.

Follow-up work involves collation of primary data, graph work, mapwork, etc., in preparation for group presentations to analyse findings and explain the final decision.



The Effects of Industrial Change in Blaenafon

Following the closure of its coal mines and steelworks, Blaenafon has suffered economic decline and faced the challenge of attempting to reverse this process. The main objective of this exercise is to identify and explain the impact decline and/or recovery has had on the local community and environment.

The fieldwork involves: environmental quality surveys of industrial sites of various ages that are in different stages of disuse/reclamation/redevelopment, detailed studies of residential areas (environmental quality, amenities, access), a CBD survey, a detailed study of a modern industrial estate. The day normally involves a visit to Big Pit (*This visit is free*).

Use of secondary data includes historical information and Census figures.

Follow-up work involves collation of primary data, graph work, mapwork, etc., with class discussion of findings or, alternatively, group presentations.

The Impact of Heritage Tourism in Blaenafon

Blaenafon was at the forefront of industrial innovation and development in the Industrial Revolution. Many old sites still exist, such as Big Pit coal mine and the ironworks. Because of its historical importance and the interest generated by its industrial heritage, Blaenafon achieved world recognition in 2000 when UNESCO awarded the town World Heritage status.

In view of this, Blaenafon provides an ideal case study of the impact of industrial decline and regeneration, with the focus on Heritage Tourism as a possible replacement economic activity. The fieldwork is designed to assess the present and potential impact of tourism and includes bipolar assessments of various tourist/recreational facilities, questionnaires of visitors and residents, gathering information about current economic activity, land-use mapping of the CBD and environmental quality surveys of residential areas. An underground tour at Big Pit National Mining Museum of Wales is an integral part of the day (*this visit is free*).

Use of secondary data includes historical information and maps, Census data and newscuttings.

Follow-up work involves collation of primary data, graph work, land-use mapping, etc., leading to class discussion of results or, alternatively, group presentations.

Urban and Industrial Regeneration – Cardiff Bay/Bae Caerdydd

This major regeneration project is transforming the former Cardiff Docklands, an area which had for many years experienced socio-economic decline and environmental degradation. Now there is redevelopment on a huge scale. At the heart of these developments is the barrage across the Taff and Ely river estuaries which has created a large freshwater lake as a visual and recreational amenity. The purpose of the exercise is to assess the appropriateness and level of success of the scheme from a variety of perspectives.

The day involves a tour through Cardiff and around the Bay, with various stops for fieldwork activities at key and contrasting locations. These comprise environmental and residential quality surveys, shopping area assessments, industrial site evaluations, surveys of recreational facility and activity provision and questionnaires of residents and visitors.

Use of secondary data includes historical information and maps, Census data and newscuttings.



Follow-up work involves collation of primary data, graph work, land-use mapping, etc., leading to class discussion of results or, alternatively, group presentations.

Agriculture

Under the title “Changing Agricultural Landscapes” this is normally a half day exercise involving a visit to a local farm. As well as looking at conventional aspects of farming, such as farm organisation, inputs, outputs, climate, etc., this also studies diversification, the influence of technological developments, the effects of Government/EU policies and changing market forces, and the influence of Local Authority planning regulations (e.g. the advantages/disadvantages of farming in the Brecon Beacons National Park).

Fieldwork involves an interview with the farmer to collect the basic statistics of the farm (area, inputs, outputs, etc.) and to discover why he/she has chosen to use the land in a particular way and what the plans are for its future use. A tour of the farm facilitates land-use mapping and field-sketching. (*N.B. the farm we normally use for this fieldwork charges a small fee per group*). (If a full day is required it is normally possible to arrange a visit to another, contrasting farm).

Use of secondary data includes maps, Brecon Beacons National Park Plan and newscuttings.

Follow-up work involves writing-up and mapwork.

The Impact of Recreational Activities in a National Park

This is a case study of Llangors (lake and village), which is a ‘honey-pot’ site in the Brecon Beacons National Park. As such it experiences seasonal pressure from visitors that has an impact on the local community and environment. One of the most controversial activities involved is water-skiing because of the ecological damage it is thought to be causing in and around the lake. This is a real, current local environmental issue and the BBNP Authority hopes to pass bye-laws which would effectively ban water-skiing from the lake.

Fieldwork involves data collection at Llangors, such as listing and mapping visitor facilities and activities, land-use mapping, environmental quality surveys, evidence of environmental impact/damage, and questionnaire surveys. There may also be opportunities to look at footpath erosion and/or indicators of water quality, and/or there may be time for an optional visit to the BBNP Mountain Centre near Brecon for a talk with slides by a member of the National Park staff, with an opportunity for questions relating to tourism, honey-pots, planning policy, etc. (*N.B. This visit involves a small extra cost per head*).

Use of secondary data includes the BBNP Plan, ecological reports, statistics of visitors, information about activities, newscuttings.

Follow-up work involves collation of primary data, graph work, mapwork, etc. to be used as evidence in a role-play debate on the issue, conducted as a simulated public inquiry.