Geographical Investigation Skills

How to undertake Geographical Fieldwork

Safety in the Field

It is suggested that teachers undertaking fieldwork should first read Section 2, Assessment (pages 36 – 47) and Section 3, The Geographical Investigation (pages 52 – 54) of the Guidelines for Teachers published by the NCCA and available on the Geography Support Service's website at geog.ie

Safety is paramount in fieldwork both for students and their teachers alike. Fieldstudy sites whether urban or rural can be hazardous so it is essential that they are chosen carefully. A full risk assessment should be carried out of all potential fieldstudy sites and only safe sites should be visited.

Due cognizance should be taken of all school policies with regard to fieldwork. Students, their parents or guardians and the school authorities should be fully informed of all aspects of the proposed trip and in particular of the safety requirements well in advance of any fieldstudy.

During the work in the field one should be vigilant as unexpected hazards can arise no matter how well one is prepared.

Using Maps in the Field

Introduction

Maps are at the heart of geography and are key resources for fieldwork. With the advent of the OSi's Trailmaster programme and the Historical Maps Project in local libraries maps have become more accessible to teachers and students.

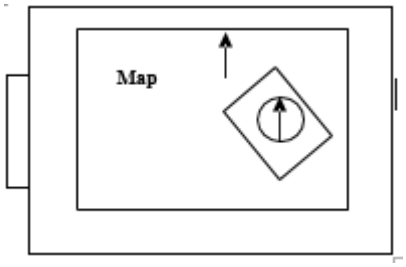
Possible Uses

The 1:50,000 Discovery Series maps are useful for locating prospective fieldstudy locations and for classroom based investigations. They are also useful in the field to assist in the interpretation of the landscape and for locating sites and phenomena using grid references.

Larger scale maps such as the 1; 2,500 Rural and Urban Place maps are useful for work in the field allowing one to record the exact location of study sites. They can also be used to record phenomena such as land use, traffic flows, environmental quality etc. Using maps in the field requires the ability to orient the map, that is, to get it facing in the right direction. It is also essential to be able to relate the map to the landscape and to locate one's present position in the landscape accurately on the map. Orientation can be practised with large scale maps in the school or local environment before one ventures further afield.

Equipment Required

Map, clipboard, Silva compass or digital compass



Technique

- Gather equipment
- Clip your map onto the clipboard
- Place the compass on your hand and let the needle come to rest
- The red arrow on the compass points to north
- Turn around so that you are facing north
- Turn the map so that the top of the map points in the direction you are facing. It is now oriented correctly
- Find things which are visible on the landscape and on the map
- Relate the landscape to the map and find your location
- Mark your location on the map with a letter, number or symbol
- Put a key on the map

Fieldsketching

Introduction

Sketching in the field develops observation skills. It is also a technique for recording phenomena in the physical or cultural landscape for later analysis.

Possible Uses

Fieldsketches are used in physical geography to identify and record river, coastal and glacial landforms. They are used in human geography to record building type and condition or for environmental surveys.

Equipment

Viewfinder, clipboard, record sheet with a grid on it, pencil, compass

Technique

- Observe the site and choose a viewpoint
- Identify the relevant features
- Using the compass note the direction you are facing
- Record the direction on the sketch with an arrow
- Decide on portrait or landscape format
- Frame the scene with the viewfinder
- Or get a partner to hold the viewfinder up for you, giving the partner instructions to move in or out until you have the view you want
- Identify the main lines such as the horizon, river bank etc.
- Draw these lines onto the grid
- Title and date the sketch
- Annotate the sketch
- Insert a key if you use symbols, colour or shading

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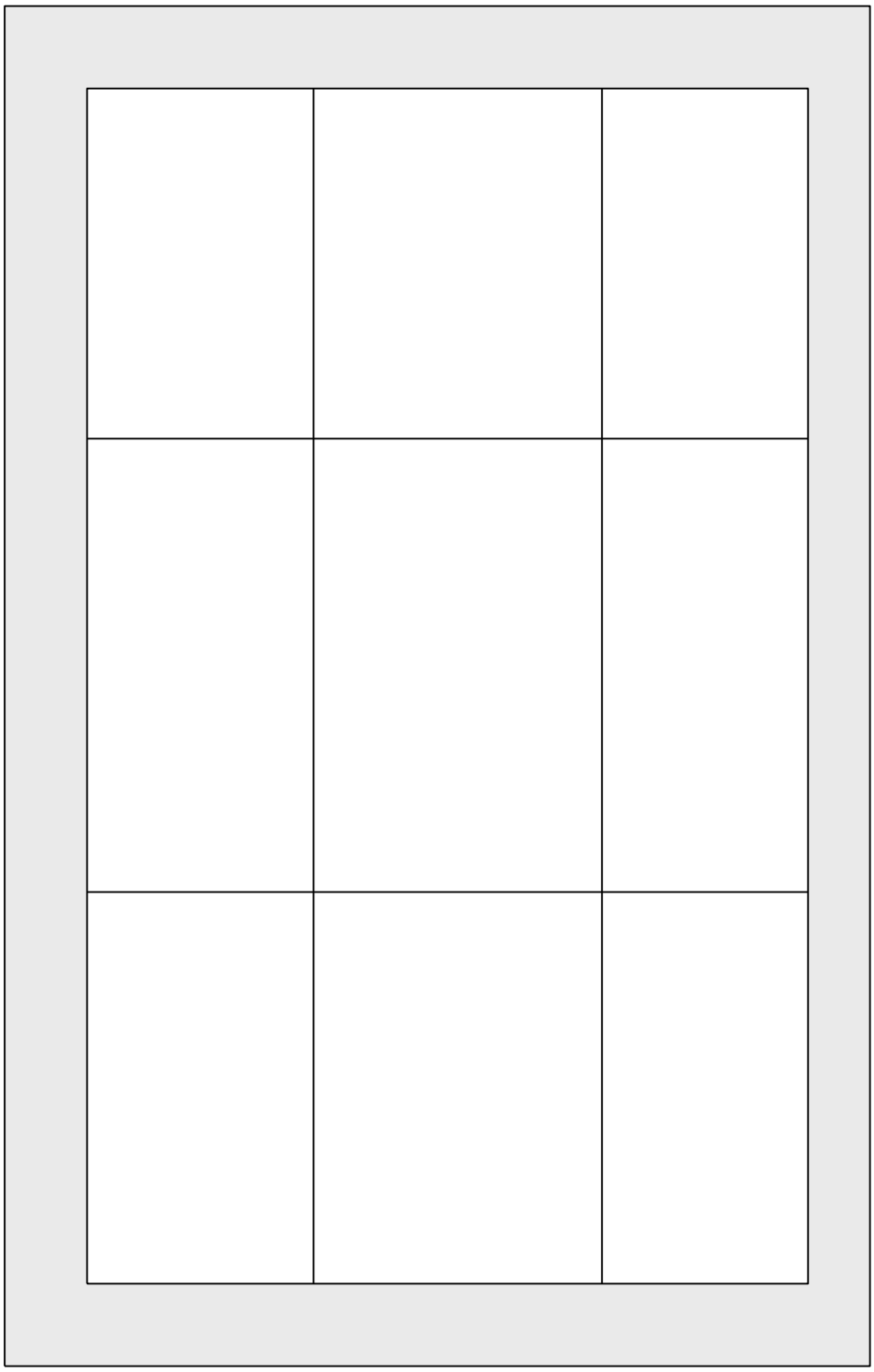
Viewfinder/grid



Questionnaires

Introduction

Questionnaires are important techniques for gathering socio-economic information.

Possible Uses

Range of retail functions

Frequency of demand for retail functions

Identifying high, middle and low order functions

Examining the influence of distance on the use of services (Distance decay model)

Questioning present occupiers regarding changes in land use over time

Perception of environmental quality

Facilities available

Reasons for residential choice

Questionnaire Structure

When designing a questionnaire try to design the questions in order that they can fit on a single page. Seven to ten questions is sufficient. Begin with background questions such as age, gender etc and then ask the questions specific to the aim of the investigation. Closed questions seek specific information: examples are yes/no, multi choice and rating scale questions. Closed questions generate information and can be quickly answered in the field and easily analysed. Open questions which ask for the respondents views take more time to administer and are more difficult to analyse. They have the advantage though that they can

give a deeper insight into why the respondent holds the views. It is advisable to pilot the questionnaire prior to use in the geographical investigation to see how it works and to find out whether it will generate the information you require.

If the questionnaires are to be given to members of the public students should role play how they will approach and speak to people. They also need to decide how they will deal with potentially sensitive questions such as age etc

Equipment

ID card, pencil, clipboard, recording sheet, clicker, tape recorder

Technique

Choose the location carefully so that you will not be short of suitable respondents

Select respondents randomly using techniques such as looking down at the ground and then looking up and choosing the first person you see

or

Use the clicker to record the number of people passing in order to select respondents randomly such as every 10th person

Introduce yourself

Explain the purpose of questionnaire

Students may work in pairs. One student asks questions while the second student records answers

Record the process to provide backup in case of doubt

Sample Questionnaire

1. Age under 25 ☐ 26 – 50 ☐ over 50 ☐

2. Gender Male ☐ Female ☐

3. How did you travel here today?

Walk ☐ Bus ☐ Car ☐ Other ☐

4. How far did you travel?

Less than 1km ☐ 1 – 5km ☐ more than 5km ☐

5. How often do you shop here?

Daily ☐ Weekly ☐ Monthly ☐ Less often ☐

6. Will you buy goods today in the any of the following shops?

Newsagents	Yes	☐	No	☐
Supermarket	Yes	☐	No	☐
Boutique	Yes	☐	No	☐
Furniture Store	Yes	☐	No	☐

7. How could this shopping centre be improved?

_____

_____

_____

_____

Counting

Introduction

Counting is a means of gathering a variety of data for geographical investigations. Students could work in groups of two or more taking turns to perform each aspect of the task or can work individually.

Possible uses

It can be used in a variety of different situations e.g. counting frequency of waves, people, traffic, litter, house types etc.

Equipment

Clipboard, pencil, compass, map, recording sheet, counter/clicker, stopwatch, camera, camcorder.

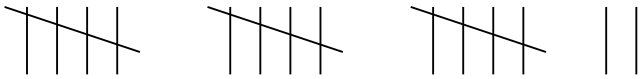
Technique

Orient your map using a compass and mark your location onto the map and recording sheet

Note and record the time, date and duration of the task

When counting items can be recorded by using a tallying method also known as the "five bar gate".

Each item is recorded by a stroke as shown below. At the end count up the number of 5 bar gates and multiply by five for the total. Then add on any spare strokes. In the example below the tally is 17



- Equally a hand clicker can be used to record each person or vehicle as it passes to get an overall total

Traffic Count

- Once you are ready to begin start the stopwatch in order to ensure the task is carried out for the agreed time period
- As each vehicle passes one student clicks the clicker so that the total number of vehicles is recorded
- Another student uses the tally method to record the type of vehicle onto the recording sheet e.g. car, lorry, bicycle, bus
- The entire activity can be recorded using a camcorder and this can be used to check accuracy of readings at a later date
- Photographs can be taken at each location also
- Once the allocated time is up the stopwatch is stopped and students record the total from the clicker onto recording sheet
- Get the total number of each vehicle type and convert to PCU's (per car units) using multiples on the recording sheet

Pedestrian Count

- Similar procedure as for the traffic count. Clickers can be used to get the total of pedestrians passing a point at a particular time
- Recording sheets can be designed to suit the type of data to be collected e.g. age and gender of people
- As each person passes students can categories them into age and gender categories if the particular investigation requires this data
- In very busy pedestrianised streets students may locate themselves back to back in the centre of the street for ease of counting crowds

Traffic Recording Sheet

LOCATION		NAME	
TIME		DATE	

LARGE TRUCKS & LORRIES		TOTAL	PCU x 3
COACHES & BUSES		TOTAL	PCU x 3
SMALL TRUCKS MINIBUSES TRACTORS		TOTAL	PCU x 2
CARS/VANS		TOTAL	PCU x 1
MOTORCYCLES / BICYCLES		TOTAL	PCU X .5
		PCU TOTAL	
	Conversion to	PCU/hr	

Land Use Survey

Introduction

Land use survey is a comprehensive means of gathering data regarding land use in urban areas. Students could work in groups of two or more taking turns to perform each aspect of the task or can work individually.

Possible uses

This task can be used when studying present day land use, changes in land use through time and space, land use zones and the impact of planning policy.

Equipment

Clipboard, pencil, compass, map, recording sheet, camera, measuring tape, trundle wheel, category list

Technique

- Orient your map using a compass and mark your location onto the map and recording sheet
- Make a note on the recording sheet of the time and date of the task.
- Data can be recorded in a number of ways
- Record land use onto a large scale maps e.g. 1:1,000 map which shows each individual building. The student can record land use directly onto the map by writing words onto the map e.g. shop, hairdresser, and bank. The category into which each building falls can also be written onto the map (e.g. service, residential)

- Instead of using a map students can record each building onto a graph page constructing a transect of the area. Each centimetre grid box on the graph page could represent a building along the transect. This method of recording allows students to record land use on all floors of the building
- Another method is to give each building a number and record this number on the map. Then record the number onto the grid on the recording sheet and fill in any relevant data on the sheet
- Once the recording method has been decided on students should walk to the first building. The building should be observed, located on the recording sheet and/or map and its land use category decided on and recorded. The pre-prepared category list can be referred to by students to assist them in this decision
- Students can also calculate the percentage of an area used for each land use. In order to do this, students must measure the width of each building. This can be done in a number of ways
- A trundle wheel can be used to measure the width of each building and the results recorded onto the recording sheet
- The width of the building can be paced by a student
- A measuring tape can be used to measure the width
- While observing the building students can also make note of the condition of the building onto their recording sheet
- All or a sample of buildings can be photographed for analysis. Buildings can also be sketched and relevant data recorded onto a fieldsketch
- Each land use category should be added up and percentages calculated and recorded

URBAN STUDY RECORDING SHEET

Map Ref	Name of building / premises	Width	Land Use		Building Height	Building Condition	General Comment
			Ground Floor	First Floor			

LAND USE CATEGORIES

CATEGORY	DESCRIPTION
RETAIL	Shops, Pubs, Department Stores, Newsagents etc
RECREATION	Cinema, Theatre, Snooker Hall, Leisure Centres etc
FINANCE	Banks, Credit Unions Building Societies Post Offices etc
PARKING	Multi-storey Car Parks, Surface Car Parks (Temporary or Permanent)
STORAGE	Warehousing or Business Storage
VACANT	Empty Buildings, Vacant Sites, or Under Construction / Renovation
COMMUNITY	Schools, Churches, Libraries, Garda Stations, Government Offices
SERVICES	Solicitors, Dentists, Accountants, Hairdressers, Doctors etc
RESIDENTIAL	Houses, Flats, Apartments
OTHER (specify)	

BUILDING CONDITION

NB Observe the building as a complete unit and not just the ground floor.

CONDITION	BUILDING DESCRIPTION
GOOD	It is in excellent structural condition. It is very well maintained. It has a very long life expectancy.
FAIR	It is well maintained ….but in need of minor repairs; eg sagging or broken gutters, broken or missing downpipes, peeling paintwork.
POOR	It is badly maintained …but is capable of being repaired. Typical faults include rotting window frames, sagging poor, large areas of plaster missing.
BAD	It is structurally unsound and has a short life span. It has major faults including bulging or badly cracked walls, holes in the roof etc.
RUIN OR VACANT SITE	Building is unstable. Roof is missing and doors are boarded up. The site has been cleared.

Plotting a River Cross-Section

Introduction

This task has many different aspects to it and therefore lends itself to cooperative group work by students. It also delivers a variety of different results and conclusions which are easily processed into different types of presentations.

Possible uses

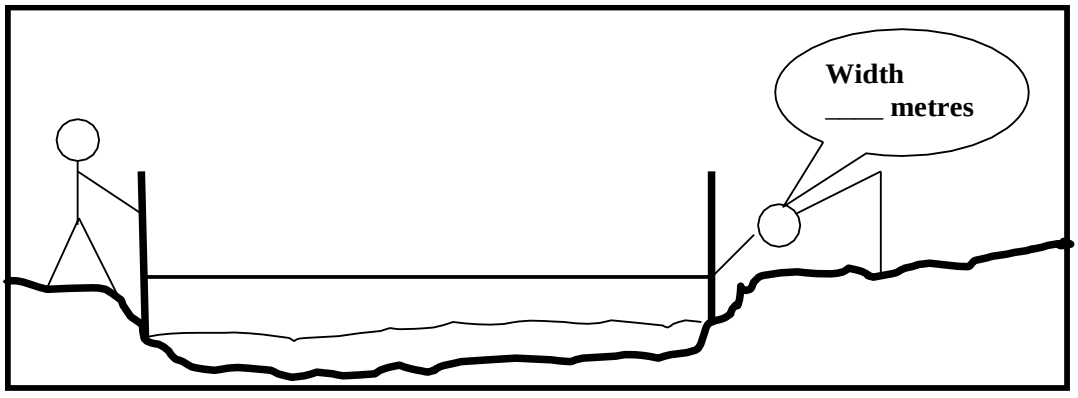
This task can be used for contrasting depth along or across a river bed and between opposite sides of a meander.

Equipment

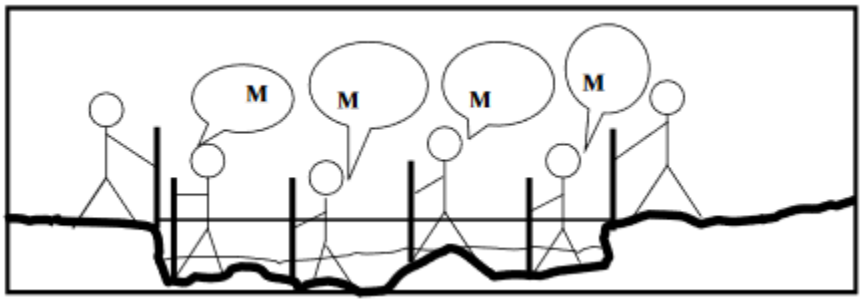
Ranging poles-at least two, metre stick, measuring tape, rope marked in metre/half metre sections, hammer, Wellingtons/waders, clipboard, pencil, and life jackets.

Technique

- Students could work in groups of two or more taking turns to perform each aspect of the task. Students must wear appropriate clothing and footwear before performing each



- Place two ranging pole directly across from each other on opposite banks of the river and secure them in place with the hammer
- Tie the marked rope onto pole number one and carefully stretch it across the river and tie it to pole number two on the opposite bank. Make sure the rope is as taut as possible
- Use the tape to measure the width of the river along the rope from pole one to pole two. Write your answer onto your record sheet
- Using the metre stick (holding it upside down helps the student read it more easily) measure the depth of the water at each metre/half metre section of the taut rope. Write the depths into the worksheets. Students could take turns doing different aspects of this task e.g. writing or measuring



- Transfer the data from the worksheet to a trend graph on a sheet of graph paper using a pencil and a clipboard for support

Plotting a Cross-Section

Recording Sheet

Width	

Depth 1	
Depth 2	
Depth 3	
Depth 4	
Depth 5	
Depth 6	
Depth 7	
Depth 8	
Depth 9	
Depth 10	
Depth 11	
Depth 12	
Depth 13	
Depth 14	
Depth 15	

Measuring Speed Using a Flow Meter/Velocity Meter.

Introduction

This method is a very accurate method of measuring. The meter itself is very easy to use by all students. It consists of a LCD display screen, a long plastic shaft and a spinning propeller. There are two types of meter:

Type 1: Displays speed in metres per second and miles per hour

Type 2: Counts the number of revolutions of the propeller.

A conversion table is needed with this type.

Possible uses

The flow meter could be used to measure the speed of any moving body of water or wind.

Equipment

Flow Meter, metre stick, three ranging poles, measuring tape, hammer, a stop watch (this depends on the type of meter), Wellingtons/waders, clipboard, pencil, and life jackets.

Technique

- Students could work in groups of two or more taking turns to perform each aspect of the task. Students must wear appropriate clothing and footwear before performing tasks
- Assemble the meter in the usual way. Put the plastic shaft together, screw in the electric cable etc.
- Place the three ranging poles along the bank of the river a given distance apart (10-20 metres) using the measuring tape. Secure the poles in the ground with the hammer.

- Locate yourself at the first pole and measure the depth of the river using the metre stick: calculate half that depth on your work sheet.
- Place the end of the shaft of the flowmeter into the water at your calculated depth. Allow the propeller to spin freely in the water and wait for it to give a reading on the LCD display.

or

- If using the second type of flowmeter. Allow the propeller to spin for the length of time prescribed by the machines instructions. Time this with the stop watch. Write down the number of revolutions and use the conversion table to work out the velocity.
- Repeat the process at each of the three measuring poles. Write the results onto your recording sheet and calculate an average over the three sites.

Speed of a River

Recording Sheet

Speed at:

Pole 1 ☐

Pole 2 ☐

Pole 3 ☐

Total ☐

Average

Total		Divided x 3	

Measuring Speed Using Floats

Introduction

Speed can also be measured using floats.

Possible uses

Floats can be used for measuring the speed of any moving body of water such as a river or coastal current.

Equipment

Tape measure, stopwatch, Wellington's/waders, floats (oranges)
ranging poles, metre stick, recording sheet, compass, hammer

Technique

- Using the tape, measure out a 10m section of the moving water.
- Mark each end of the 10 metres section by pushing a ranging pole into the ground
- Secure the poles with the hammer
- Throw an orange into the moving water and using the stopwatch record the length of time it takes the orange to travel 10 metres
- Repeat this exercise 5 times
- Record the number of seconds each orange takes to travel 10 metres
- Calculate the average time it takes the 5 oranges to travel 10 metres
- Calculate the average distance an orange travels in one second

Discharge Recording Sheet

Discharge is a measure of the volume of water passing a point on a river bank in a second. It is given in cubic metres per second or cumecs. To calculate the discharge of a river one needs its cross sectional area and the distance it travels in a second. Discharge influences river processes.

River width (M)

River Depth (M)

Mean Depth									

Total Depth ÷ Number of Depths = _____M

Cross-Sectional Area

Mean Depth x River Width = _____ M^2

Speed

Time in seconds					

Average Time	Seconds

Speed = Distance (10m) = 10m = _____M/S

Average Time

Discharge = Cross-sectional Area X Speed

_____ M^2 X _____M/S = _____Cubic Metres / Sec

(Cumecs)

Measuring Slope

Introduction

Slope measurement can be used in a variety of contexts to identify the presence of a wide range of landforms.

Possible uses

Slope transects can be used to draw profiles of river, coastal and glacial features such as valleys, moraines, beaches, dunes and drumlins. They can also be used to show the gradient of rivers, roads or railway lines.

Equipment

Ranging poles, hammer, measuring tape, clinometer, recording sheet, compass, graph

Technique

- Identify a transect (survey) line.
- Mark the start and end of the transect line.
- Using the compass record the orientation of this line.
- Sketch a profile of the transect indicating the break of slope points.
- Label these points A, B, C etc.
- Select the first two surveying points along the transect line (A & B)
- Measure and record the distance between these points
- Use the clinometer to measure the angle of slope between the points
- Move to point B and repeat the exercise of measuring the distance and angle between points B & C
- Repeat this exercise for each slope section along the transect line
- Graph the distance and angles to construct the profile

Slope Recording Sheet

Sketch of Slope Profile

Orientation	A - B	B - C	C - D	D - E
Distance				
Angle				

Load and Transport Experiment

Introduction

Experiments can be carried out to investigate the load carrying ability of moving water.

Possible uses

To demonstrate the ability of rivers, streams or coastal currents to transport load and to investigate how speed of flow and grain size affects this.

Equipment

Callipers, pebbleometer, white plastic board or silver biscuit tin lid, clipboard, record sheet

Technique

- This activity suits pair or group work
- Identify a location where load has been deposited by the current
- Take a sample of the load
- Identify ten/twenty grains of different sizes
- Using your pebbleometer and callipers measure the long axis of the grains and record their sizes
- Put the grains aside carefully
- Choose a site where the water is fast flowing but shallow
- Place the white board or biscuit tin lid on the bed and secure it
- Place the smallest particle on the board and observe what happens
- If it is transported away try to identify how it moves
- Does it roll, hop along the bed or is it lifted up and suspended
- Record what happens

- Repeat the process increasing the grain size of the particles as you progress
- Record what happens to each grain
- Using a flowmeter or floats (as already shown) get the speed of the current at the site
- Repeat the process at a site where the current is slow moving

Load and Transport Record Sheet

Sample	Long axis	Did not move	Rolled	Hopped	Suspended
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Investigating Transportation in Solution

Introduction
The transportation by solution can also be analysed by measuring the pH of waters samples with either pH papers, universal indicator or an electronic pH meter.

Possible uses
Low pH values can indicate acidification of water bodies and changing pH values can indicate changes in the dissolved load of a water body so pH tests are relevant in physical and environmental geography.

Equipment
Compass, map, bucket, rope, sterilized containers, pH papers, or pH meter, or universal indicator, pH colour, chart, recording sheets

Technique

- Pick a suitable location to conduct the exercise
- Orient your location and your O.S map
- Record the location on the map
- Collect water from the river using the bucket and rope
- Place the water into sterilized vessels
- Insert the pH paper or meter or universal indicator into the sample
- Compare the results to a pH colour chart.
- Record your readings in your recording sheet
- Repeat this exercise at a few different site
- Record the readings on the recording sheet
- Get an average for those readings and record

Record Sheet for pH tests

Site 1	
Sample	pH value
1	
2	
3	
4	
5	
	Average pH Value

Site 2	
Sample	pH value
1	
2	
3	
4	
5	
	Average pH Value

Site 3	
Sample	pH value
1	
2	
3	
4	
5	
	Average pH Value

Sinuosity

Introduction

Sinuosity is a measure of how curved a line is.

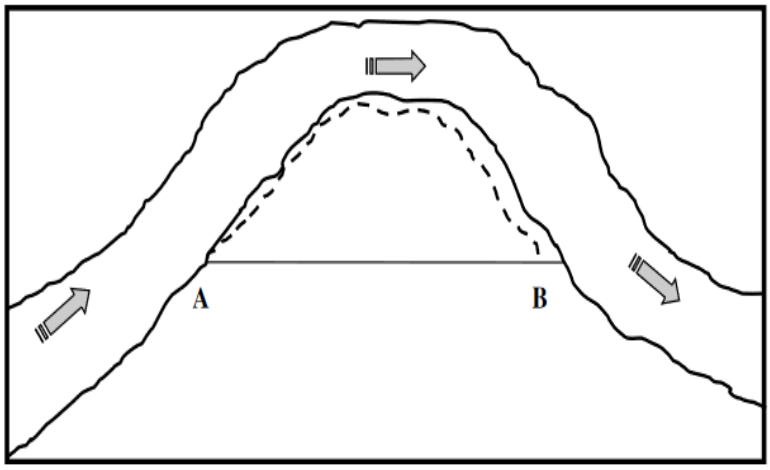
Possible uses

A sinuosity ratio compares the straight distance to the curved distance between two points along a river bend or road. It is used to determine if a river or road is meandering or merely sinuous. Sinuosity takes the guess work out of deciding whether a river or road is meandering or not.

Equipment

Tape measure, 1:50,000 map, ranging poles,

Technique



- Identify a curve in the river/road from a high viewpoint
- Draw a sketch of the curve
- Locate the point where the curve on the river/road changes direction, mark this as point A as shown in the diagram.

- Locate the next change in direction of the river/road and mark this point on the diagram as B
- Measure or pace the distance between A and B along the curve of the river/road and record the distance or number of paces
- Measure and record the straight line distance between points A & B
- If the curved distance is more than one and a half times the straight distance the river/road is meandering

Sinuosity Record Sheet

Sketch of bend

Straight Distance ☐

Curved Distance ☐

Straight Distance : Curved Distance = Sinuosity Ratio

If value is 1:1.5 or greater the river/road is meandering

Longshore Drift

Introduction

The purpose is to measure the direction and rate of longshore drift.

Possible uses

This exercise gathers information regarding the geomorphic processes at work in a coastal environment.

Equipment

Clipboard, pencil, compass, map, recording sheet, 5 oranges, ranging pole, stopwatch, measuring tape.

Technique

- Orient your map using a compass and mark your location onto the map and recording sheet
- Note and record the time, date and duration of the task
- Stick a ranging pole in the beach at the shoreline
- Throw the oranges into the zone where the waves are breaking in line with the pole. Start the stopwatch
- After 15 minutes mark a point on the beach in line with the position of each of the oranges
- Using the measuring tape, measure the distance in metres between the marker for each orange and the ranging pole. Record these
- Calculate the average distance travelled and record it
- Using the compass determine and record the direction travelled by the oranges.

Longshore Drift Record Sheet

Orange	Direction of Movement	Distance Travelled in 15 Minutes	Average Distance Travelled	Average Distance Travelled in an Hour
1				
2				
3				
4				
5				

Wave Frequency

Introduction

Counting skills can be applied to this task. Students could work in groups of two or more taking turns to perform each aspect of the task or can work individually.

Possible uses

The purpose of this exercise is to determine the frequency of waves and to attempt to classify the waves as either constructive or destructive.

Equipment

Clipboard, pencil, compass, map, recording sheet, counter/clicker, stopwatch, camcorder.

Technique

- Orient your map using a compass and mark your location onto the map
- Note and record time, date and duration of task
- Use the stopwatch to time the duration of the count e.g. five minutes
- Over the period of the five minutes count the number of waves that break on the shore. This can be done using a clicker if you wish
- Record the number of breaking waves onto the recording sheet
- Repeat this exercise twice and record the number each time
- Use the camcorder to record the task for reference later if you wish
- Calculate the average number of waves per time period on the recording sheet to help classify the wave types

Wave Frequency Record Sheet

Location _____

Time _____ Date _____

Duration of count in minutes _____

	Count 1	Count 2	Count 3	Average
Number of Waves				

Wave Classification

Average no. waves per 5 mins	No. of waves per minute	Type of Wave	Wave period
		Constructive Destructive	Less than 8 per minute. Low, break gently 8 or more per minute. High, break rapidly

NB This is a rule of thumb and only gives an indication of wave type.

Measuring Height of a Vertical Slope

Introduction

Height is an important aspect of many landforms and cultural features

Possible uses

The height of cliffs, waterfalls, u-shaped valleys, drumlins and buildings etc. can be measured to provide surveys of physical and cultural features.

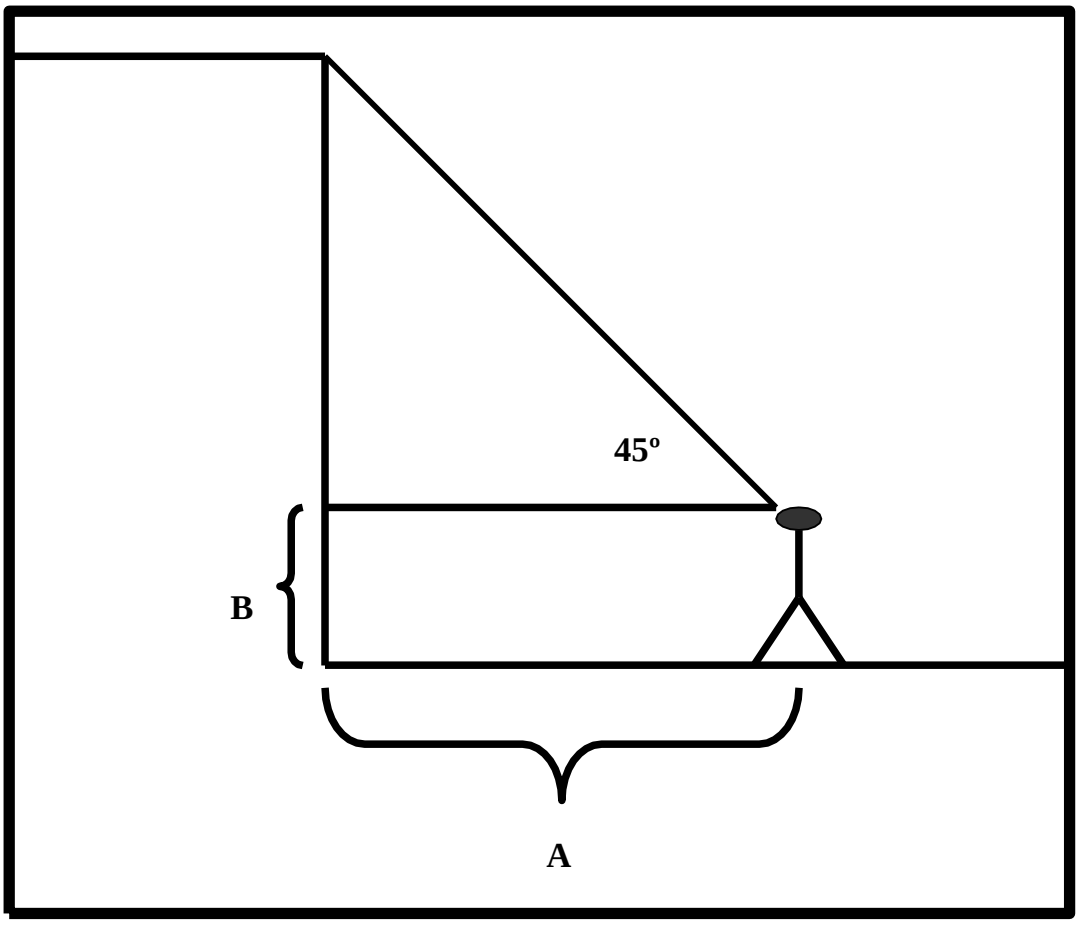
Equipment

Measuring tape, clinometer, recording sheet, pencil, graph paper, protractor, ruler

Technique – Height of a Vertical Slope Such as a Cliff

- Stand in front of the cliff and measure the angle to the top of the cliff using the clinometer
- If the angle is less than 45° move closer to the cliff until the angle is equal to 45 °
- If the initial angle measured is greater than 45° then move away from the cliff until the angle is equal to 45 °
- Measure the distance from where you are standing to the base of the cliff (A in the diagram)
- Record this distance on the accompanying sheet
- Measure the height of the person from eye level to the ground (B)
- Record this distance in the appropriate place on the recording sheet
- Add the two distances together
- This measurement is equal to the height of the cliff

Vertical Slope Recording Sheet



Distance A ☐ M

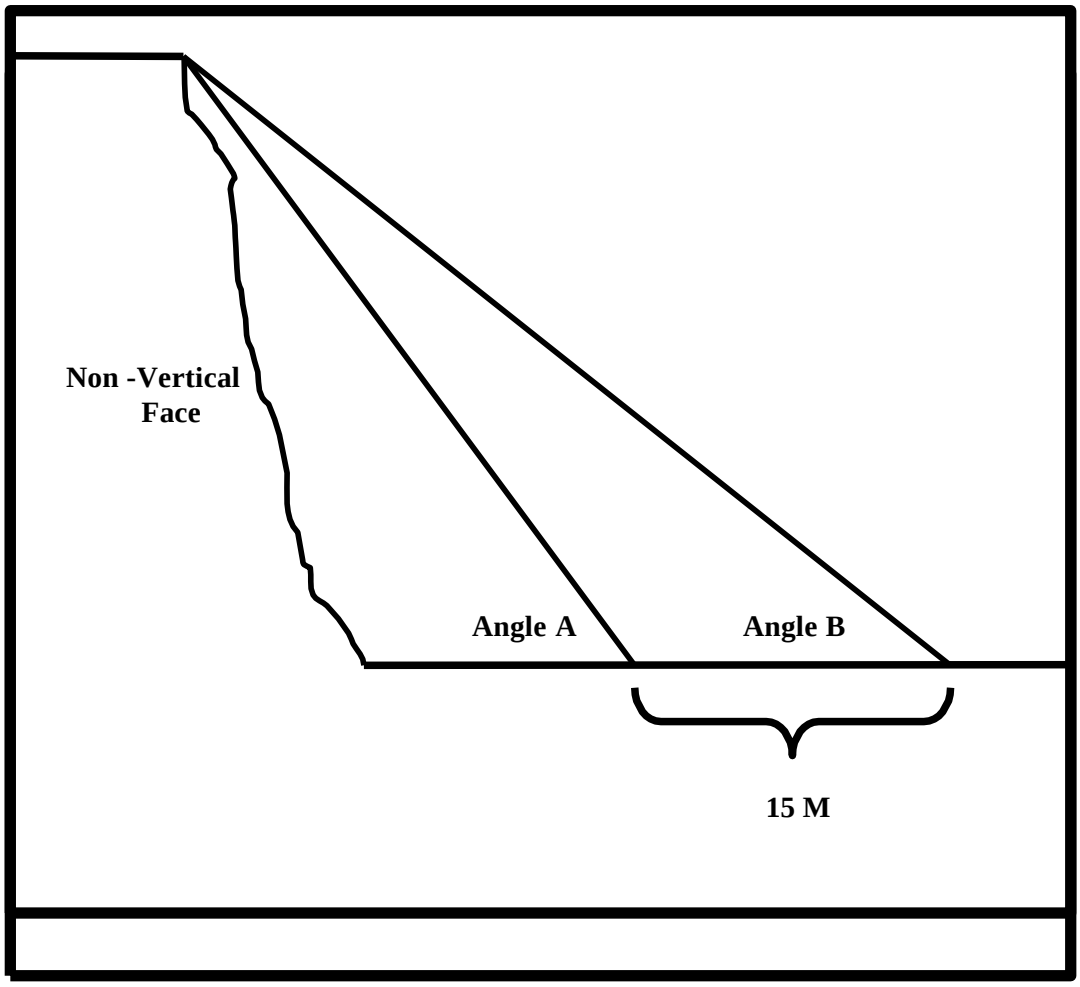
Distance B ☐ M

Vertical Height = A + B ☐ M

Technique – Height of a Non-Vertical Slope

- Mark a point (A) on the ground any distance from the slope
- Using a tape measure mark a second point (B) 15m away from point A at right angle to the slope
- Using a clinometer measure the angle both from point A and point B to the top of the cliff
- Record these angles on the recording sheet (A° and B°)
- Using the pencil draw a base line along the bottom of the graph page
- Mark point B at the right hand edge of the base line
- Decide on an appropriate scale such as 1cm represents 2m
- Mark point A on the base line
- Draw a line from point A at angle A° to the edge of the page
- Draw a line from B at angle B° to the edge of the page
- At the point of intersection of these lines draw a vertical line down to the base line
- Measure this vertical line and using the scale of the sketch convert the height to metres
- This is equal to the height of the cliff

Non – Vertical Slope Recording Sheet



Angle A ☐ degrees

Angle B ☐ degree

Fabric Analysis – Size of Particles

Introduction

The fabric or composition of various materials can be analysed as part of a fieldstudy.

Possible Uses

Sediments deposited by rivers, waves, currents and glaciers can be sampled and their size, shape and rock type recorded and analysed

Equipment

Quadrat, pebbleometer, callipers, scrubbing brush, bucket, acid, penknife, clipboard, plastic gloves, recording sheet

Technique

- Gather equipment – quadrat, pebbleometer, callipers
- Allocate jobs to group members- gatherer, measurer, etc.
- Choose a safe site on the material
- Locate site on the map
- To get a random sample the gatherer throws the quadrat onto the fabric (bed load, beach, esker etc) a number of times and picks the particles from the four corners each time
- Put the particles in the pebbleometer and measure the long axis
- Measurer uses callipers to measure small particles
- Recorder notes the measurements
- Repeat this process until you have enough measurements
- Replace the particles where they came from

Size of Particles Record Sheet

Sample	Long Axis
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

Total of long axes ÷ Number = Average grain size

Material Analysis – Geology of Particles

Introduction

The geological composition of various materials can be analysed as part of a fieldstudy.

Possible Uses

Sediments deposited by rivers, waves and glaciers can be sampled and their rock type determined to see where they came from

Equipment

Quadrat, scrubbing brush, bucket, dilute hydrochloric acid, penknife, magnifying glass, clipboard, plastic gloves, recording sheet

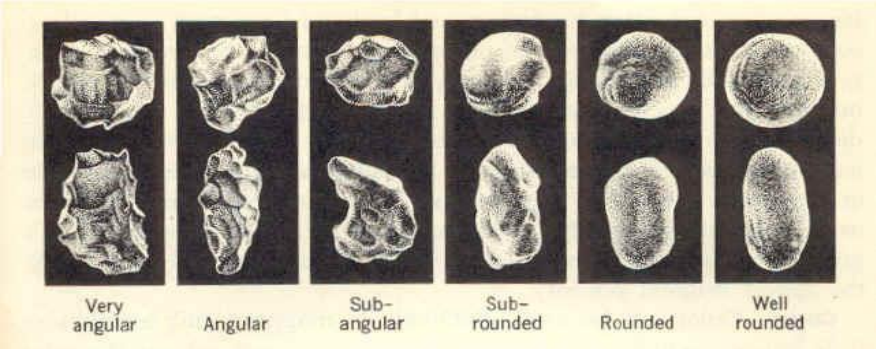
Technique for analysis of fabric size

- Choose a safe site on the fabric to be analysed
- To get a random sample the gatherer throws the quadrat onto the material (river bed, beach, esker) a number of times and picks the particles from the four corners each time
- Wash the particles in the bucket with the scrubbing brush
- Allow the particles to dry
- Sort the particles into groups which look the same
- Do acid and scratch tests on a typical sample from each group
- Examine the samples with the magnifying glass
- Compare samples with known samples or photographs
- Identify the sample
- Count the number of each rock identified and record this
- Work out the percentages of each rock type
- Replace the particles where they came from

Fabric Analysis - Geology

Rock Name	Quantity	Percentage
Total		100%

Fabric Analysis – Roundness



Powers Roundness Chart

Degree of Roundness	Number	Percentage
Very angular		
Angular		
Sub-angular		
Sub-rounded		
Rounded		
Well rounded		
Total		100%

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Activity Worksheet

Name of Activity _____

Stages in gathering data

Evaluation of activity
