

1. Safety Features

- Protection from the weather (waterproof jacket, umbrella, hat, sun cream)
- Always carry out coursework in groups
- Always tell an adult or teacher where you are carrying out coursework
- Always carry a mobile phone with you
- Never do coursework near a river or the sea without an adult or teacher and without them checking that it is safe
- Carry out coursework in day light and wear reflective clothes
- Check that your study area is safe.
- Don't display valuables making you more vulnerable to crime e.g. if you have a camera or a phone keep it out of sight

2. Data Collection

- **Objective:** when data collection is not influenced by people's personal opinion.
- **Subjective:** when personal opinion has an influence on the outcome of the data collection.
- **Primary data:** Any data that is personally collected by you. Primary data may include traffic counts, pedestrian counts, environmental indexes, questionnaires or land use surveys.
- **Secondary data:** Any data that has been collected by someone else. Secondary data collection may be found in books, on the internet, in academic journals, etc.
- **Census:** a survey carried out by nearly all countries every 10 years. Is a very detailed survey that is compulsory for everyone to fill in.

Primary

Advantages:	Disadvantages:
It is up to date (current)	Data may include some personal bias
You know how the data has been collected i.e. what technique	Data collection can be time consuming
Includes data relevant to coursework	Can be expensive to collect data
Only covers your study area	It is hard to study temporal changes
Collected in the format that you want	Some data might be unavailable or too dangerous to collect
	Only possible to cover a small area

secondary

Advantages:	Disadvantages:
Can study temporal changes e.g. over a number of year	It is out of date

Advantages:	Disadvantages:
It can be quicker, especially if the data is on the internet	More information than you need
You can study a larger area	Information may include a larger area than your study area
May include data that you cannot obtain personally e.g. salaries	May not know how data was collected and who collected it
	Data might be in the wrong format e.g. in a graph and not raw figures

- **Quantitative data:** Any data that involves figures. Is very easy to present and analyse however it can be very general and excludes some data.
- **Qualitative data:** This is written data or photographs. Tends to be individual/personal, and can be hard to present and analyse. Often comes as results of interviews with open questions.
- **Pilot Survey:** a test you carry out before data collection. Important to test forms to ensure you ask right questions and forms contain all right categories. It is too expensive/time consuming to go and collect data a second time, if you missed it the first time.
- **Sampling:** a section or part of entire study area/population, representing the whole. Necessary to only investigate sample due to time and money limitations.
- **Systematic Sampling:** When you collect data in a regular pattern. E.g. asking every 10th person or collecting physical data after every 5 meters.
- **Random Sampling:** When every area or person in your study area has an equal chance of being selected or asked. Can be done by pulling names out of a hat, by using a random number table or a random number generator on a calculator.

Systematic Sampling	
Pros:	Cons:
Better coverage of area/sample group.	Bias because you're selecting technique & deciding e.g. 10th person to ask
No bias in who is selected	May end up with an unrepresentative sample e.g. every 10th person is female
Very simple to understand and carry out	

Random Sampling:	
Pros:	Cons:
Every person/location has a completely equal chance of being selected	Results may be random and not representative e.g. selecting names out of hat and only pick females

Random Sampling:	
It is quick and simple	

3. Questionnaires

- **Open ended questions:** questions that have infinite numbers of answers. The respondent has no restriction on how they might answer
- **Closed questions:** when there is a limited number of responses. These questions are often multiple choice in style

Open ended questions	
Pros:	Cons:
You are getting respondents personal opinion. They are not limited in their response.	Some responses irrelevant
	Results very hard to analyse using graphs or tables

Closed questions	
Pros:	Cons:
All answers relevant to your research	Results lack personal opinion; very generalized
Results are easy to analyse using graphs and tables	If "other" box ticked, you don't know what the respondent thinks
	Your personal opinion has been placed on the questions (subjective).

4. Photographs

Advantage of Photographs	Disadvantage of Photographs
They are more accurate than field sketches	People often include irrelevant photos
Can be good for showing data collection techniques e.g. measuring a river's load	People forget to label, annotate or refer to photos, which then makes them irrelevant
Can support data collection findings e.g. show an example of a poor environment	People often only photograph the nice things (pretty view) and forget more ugly areas that are important (area of pollution)
They can show temporal changes, especially if you can find historical photos.	They can often contain too much information e.g. people and vehicles
You can annotate and label them.	Because they are two-dimensional, depth can be deceptive

5. Fieldwork Equipment

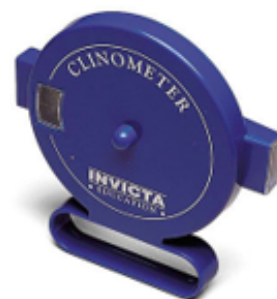
- **Quadrat:** Used for measuring vegetation cover. Normally 50cm² and divided into 100 small squares. By placing quadrat over an area of vegetation, can calculate area covered in vegetation or % of different vegetation types. Also sometimes used for randomly selecting river load or beach material. Can put quadrat over area you want to sample and then using a random number table or calculator, select a square to collect the sample from.



- **Callipers:** used to measure width, depth or length of small objects like load. Place object to be measured inside calliper and then close calliper and read off measurement (cm/mm). Callipers are great for recording changes in a river's load or changes in beach material.

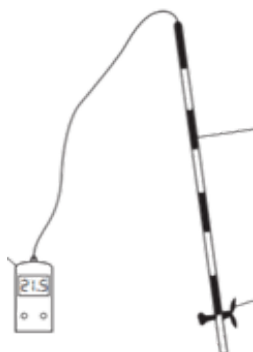


- **Clinometer:** used for measuring slope angle (gradient). Used together with ranging poles; place one ranging pole at top of a slope and one at bottom. Look through clinometer, measuring angle from one ranging pole to another ranging pole. To get an accurate angle, you take an up reading and a down reading.



- **Flowmeter:** used for measuring velocity of rivers. Have a small propeller which you place just under surface of the water. Depending on the speed of propeller, a small

digital read out then gives speed of river.



- **Pebbleometer:** A very basic device for measuring the size and shape of material found on a beach or in a river.



6. Methodology

- **Transect:** a line along which you take measurements. You may have a transect that runs from rural-urban fringe to the CBD or a transect that runs from the sea in land through sand dunes.
- **Tally system:** Fast, efficient to record, easy to read, easy to add up and total
- **When sketching, write:** Date, time, name, weather conditions
- **Description of methodology could include:**
 - Date, time and location of data collection
 - Group size
 - Description and copy of data collection forms used e.g. questionnaires or counts
 - Explanation of how forms were used e.g. sample size, count period, count technique, etc.
 - Description of equipment and an explanation of its use.

7. Data Presentation

Strengths	Weaknesses
Shows spatial distribution e.g. dot map	Can disguise intra-region or intra-country variations e.g. choropleth map
Shows variations between regions and countries e.g. choropleth map	Hard to see trends and anomalies
Visually interesting (interesting colors, symbols)	Very complicated to read

Strengths	Weaknesses
Very bold and clear	Symbols take up too much room
Easy to understand	
Clearly shows trends and anomalies	

8. Evaluation and Conclusion

8.1. Conclusion

- Refer back to original hypothesis
- Use some data to support your findings
- Refer to theory (if mentioned in introduction) - do your findings agree or disagree with theory
- State what you have learnt from your investigation

8.2. Evaluation

- What went well (keep this brief)
- Any problems with data collection e.g. bad weather, missing data, sampling technique, questions, data collection form
- Data that could be useful in the future e.g. secondary data from government, more questionnaires (bigger sample)
- Additional hypothesis you could have used
- Time/money problems changed

9. Sample Investigations

9.1. Measuring Velocity

- Equipment: tape, stopwatch, poles, float
- Measure 10m along river: place poles
- Use floats
- Stopwatch to time
- Different points along channel
- Repeat 3 times and calculate mean

9.2. The speed of the river is influenced by friction

- Friction increased if there are larger rocks
- Speed decreases if friction increase
- Flow is turbulent with rocks; rocks divert flow

9.3. River features

- Upper course: waterfalls, rapids, V-shaped valley
- Lower course: meanders, ox-bow lake, deltas, levees, floodplains

9.4. Systematic random sampling technique

- Measure with tape at 1m intervals across
- Pick up stones that poles touch
- Take a number of samples at each point across river

9.5. Measuring depth

- 0.5 m intervals held across stream
- Rope and measuring tape, knot
- Hold stick vertical to bank
- Measure depth to river bed

9.6. Measuring beach profile

- Use tape to set out transect lines
- Start at water's edge and place pole
- Vertical pole 5 m away
- Angle of slope using clinometer to mark
- Record & repeat

measuring depth

- measured at a number of points across the channel all the way from bank to bank
- use rope & measuring tape, knot
- Hold stick vertical to bank
- Measure depth to river bed

channel width

- measured from the top of one bank to another
- tape measure needs to be stretched right across the channel at right angles to the bank

9.7. Collecting Land Use Data

- Organize into groups
- Observe/survey buildings
- Systematic survey
- Record/map
- Classify function of buildings

9.8. How to carry out traffic counts

- Pairs of students on each side of the road
- Synchronize timing
- Count their side and tally recording
- Add up total

9.9. Improvement on Traffic Counts

- Survey at more times during day
- Survey on different days: work/non-work
- Have another student check
- More survey points

Destructive & Constructive waves

- use stopwatch & count the number of waves breaking on the beach in a 5 min interval
- work out the number of waves per minute

$$\text{velocity} = \frac{\text{distance}}{\text{time}}$$

- Measure 10m distance along the river bed
- throw in a float/orange/cork at the start of the measurement
- use stopwatch to time how long it takes to travel 10m
- Repeat 5 times to get an average time

Longshore drift

- plot a distance of 10 m along a section of beach & mark start and end point
- place a float in the water at the point where the waves are breaking
- watch the float & time how long it takes for it to travel.

★ hello, quick reminder!

please also study weather topic, may appear in exam, May/June need it!!!