



Coast Study

Enquiry Skills Approach, Version 1.1

A. Planning and Preparation

Objectives

1. To study the wave characteristics of the field site.
2. To study the coastal features of the field site.
3. To study the relationship between the water quality and the human activities at the field site.

Scope of the Study

1. Lido Beach in Sham Tseng, or
2. Approach Beach in Sham Tseng, or
3. To Tau Bay in Wu Kai Sha

Field Work Plan

A1 Basic Information

1. Browse the web site of Hong Kong Observatory, and record the tidal information of the selected field site.

a) High tide: Time _____ Height _____ m

b) Low tide: Time _____ Height _____ m

A2 Setting Transect

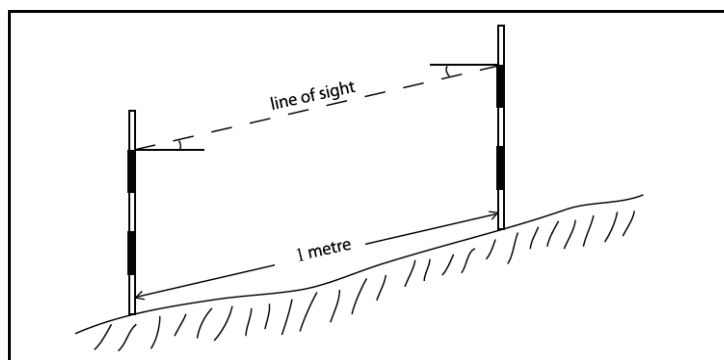
1. Set up a 12 m long transect perpendicular to the shore, which best represents the beach profile.
2. Run 3 m of the transect into the sea and the rest along the profile to the backshore.

Think About

List the safety risks when conducting coastal fieldwork.

A3 Profile Gradient

1. By using the measuring tape, ranging poles and abney level, measure the gradient along the transect at every 1 m intervals (see Figure 1.1).
2. Record the data in Table 1.3 and draw the profile in Figure 1.2.

Figure 1.1 - Beach Profile**Think About**

Suggest another method to measure beach profile.

A4 Sediment Size and Shape

1. Collect about 50 g surface sediment with trowel and a small plastic bottle.
2. Analysis of the sediment size and shape will be carried out in the laboratory.

A5 Longshore Drift

1. With the compass and anemometer, measure the wind direction and wind speed for 1 minute.
2. Throw the bottle/ float provided into the sea near the shore.
3. Observe the route and horizontal displacement of the bottle/ float carefully for 1 minute, and record them in Table 1.4.

A6 Swash and Backwash

1. Count the number and observe the strength of swash and backwash in one minute and record them in Table 1.5.

Laboratory Work**B1 Sediment Size and Shape**

1. Weigh 50 g of dried sediment by using electronic balance.
2. Pour the dried sediment onto a nested column of sieves provided. (The sieves should be placed in order with the openings diameter decreasing from top to bottom.)
3. Put the lid back on the column of sieves and hold them firmly with both hands. Shake the column horizontally and softly for 5 minutes.
4. Pour the sediment of each sieve onto a paper and weigh them with the electronic balance.
5. Record the data in Table 1.6 and calculate the percentages of each sediment size.
6. Use a 10 times magnifier to observe the shape of sediment.

B2 Dissolved Oxygen Test

1. Pour the water sample into a conical flask.
2. Put the probe of the Dissolved Oxygen meter into the conical flask.
3. Record the reading in Table 1.7.

B3 Salinity Test

1. By using a salinity meter, read the salinity reading and record it in Table 1.7.

B. Data Collection

Data Items

1. Profile Gradient
2. Sediment Size and Shape
3. Route of Longshore Drift
4. Wind direction and wind speed
5. Swash and Backwash
6. Dissolved Oxygen
7. Salinity

Data Collection Method

1. Systematic Sampling

Equipment List

Items	Quantity	Checked	Returned
1. Abney level	x1	<input type="checkbox"/>	<input type="checkbox"/>
2. Base map (Individual)	x1	<input type="checkbox"/>	<input type="checkbox"/>
3. Clipboard (Individual)	x1	<input type="checkbox"/>	<input type="checkbox"/>
4. Compass (Individual)	x1	<input type="checkbox"/>	<input type="checkbox"/>
5. Anemometer	x1	<input type="checkbox"/>	<input type="checkbox"/>
6. Gloves	x2	<input type="checkbox"/>	<input type="checkbox"/>
7. Measuring tap - 30m	x1	<input type="checkbox"/>	<input type="checkbox"/>
8. Ranging pole	x4	<input type="checkbox"/>	<input type="checkbox"/>
9. Level meter	x2	<input type="checkbox"/>	<input type="checkbox"/>
10. Sampling bottle	x1	<input type="checkbox"/>	<input type="checkbox"/>
11. Small plastic bottle	x1	<input type="checkbox"/>	<input type="checkbox"/>
12. Trowel	x1	<input type="checkbox"/>	<input type="checkbox"/>
13. Plastic bucket	x2	<input type="checkbox"/>	<input type="checkbox"/>

Equipment List (Laboratory Work)

1. Conical flask	5. Crucible
2. Beaker	6. Electronic balance
3. Salinity meter	7. Sieves
4. Dissolved oxygen meter	8. Electric Oven

Think About

List possible errors when collecting data.

Data Recording Sheet (Field Site: _____)

Figure 1.2 - Beach Profile

Table 1.3 - Profile Gradient

1	2	3	4	5	6	7	8	9	10	11	12

Table 1.4 - Longshore Drift

Wind Direction: _____ Wind Speed: _____ m/s

Direction of Longshore Drift : From _____ to _____

Horizontal displacement of Longshore Drift: _____ cm

Table 1.5 - Number of Swash and Backwash

Number of Swash: _____/min Number of Backwash: _____/min

Strength of Swash: Stronger/Weaker Strength of Backwash: Stronger/Weaker

Table 1.6 - Sediment Size

Weight of Crucible = _____ g

Total Weight of Sediment Sample and Crucible = _____ g

Diameter: > 2mm Weight= _____ g Percentage= _____

Diameter: 2mm ~ >0.063mm Weight= _____ g Percentage= _____

Diameter: <= 0.063mm Weight= _____ g Percentage= _____

Table 1.7 - Water Quality

Dissolved Oxygen: _____ mg/L Salinity: _____ ppt

C. Data Processing, Presentation and Analysis

1. Complete all the tables.
2. Use appropriate graphs and diagrams to present the data collected.

Think About

List the merits and demerits of the chosen graphs or diagrams.

D. Interpretation and Conclusion

1. Describe the surrounding environment and water quality of the field site.

2. Summarize the main findings and graphs, describe and explain the distribution of sediments in the field site.

3. Describe the wave energy in the field site, and explain how the location and other factors affect it.
