

GEOGRAPHICAL INVESTIGATION / ENQUIRY BASED ON FIELDWORK

Model answers for PHYSICAL (LONGSHORE DRIFT ON THE LINCOLNSHIRE COAST)
HUMAN (ENVIRONMENTAL IMPACT OF TOURISM IN A BRITISH RESORT)

1. **BACKGROUND THEORY:** "Outline the geographical theories on which your investigation is based."

PHYSICAL : Sand beach coastlines are subject to Longshore Drift caused by the swash and backwash of breaking waves. The direction of Longshore drift depends on the Dominant wave approach which in turn is determined by then mean / average wind direction. The direction of longest Fetch is also important as this determines the most powerful waves with greatest energy, and on the east coast of England this is to the north east.

On the Lincolnshire coast the general direction of Longshore Drift is from North to South, meaning that the north side of groynes should have more sand accumulated.

HUMAN : The Environmental Quality in seaside resort such as Skegness and other coastal resorts in Britain depends on the location within the town.

Typically beach front locations with more traffic, more tourists, more on-road parking, amusements, arcades, cafes, fish and chip shops etc. have a lower environment quality than inland suburban areas nor frequented by visitors.

It is expected that noise, litter, traffic, pedestrian density etc. will be greater in the coastal tourist areas.

2. **LOCATION:** "explain why the chosen location is suitable for data collection." "Assess the suitability of the location for your enquiry."

PHYSICAL : Skegness has a gently sloping sand beach overlooked by coastguards for safety. It lies at the southern end of the Lincolnshire coast where the general direction of longshore drift is north to south.

The water offshore is shallow and does not slope steeply and the area very rarely has dangerous storm waves.

Skegness has a number of groynes to allow the measurement of sand build up on each side to determine the direction of longshore drift.

HUMAN : Skegness is the most popular and most visited resort on the Lincolnshire coast and the tourist facilities stretch along the entire eastern edge of the town bordering the North Sea. It has large visitor numbers and numerous amusements, arcades, cafes, bars, shops etc. found on a thin strip along the coast. This allows the study of the impact of tourists on the environmental quality.

This can be compared easily with the suburban areas just to the west which tourists do not visit and should have a better environmental quality.

3. **RISKS AND RISK ASSESSMENT / RISK REDUCTION:** "Identify one risk and explain how the risk was reduced."

PHYSICAL : Drowning, Hypothermia, Exposure, Wind and rain, Rising tides, Stormy weather and large waves.

Reduction : Students work in groups within sight of the teachers and the coastguards.

Before the field trip the weather forecast was checked and students were advised to have appropriate dress available.

Tide tables were checked before the fieldwork so that groyne measurements could be done at a falling tide close to low tide.

HUMAN : Busy roads Heavy traffic possibility of accidents, possible negative interactions / violence with resort visitors and/or local residents, Extreme weather, cold / exposure.

Reduction : Students work in pairs / small groups and each group has a phone to contact teacher if needed.

Weather forecast checked beforehand and students advised to have appropriate clothing including rainproof coats if rain is expected.

Students reminded of the need for road safety and advised to cross at zebra crossing / lights.

Students reminded of the need for politeness in all interactions with the public and to phone the teacher if help needed.

4a. **PRIMARY DATA COLLECTION:** "Assess the effectiveness of the data collection methods." "To what extent did the data collection allow you to reach valid conclusions?" "Explain how one data collection method may not have been accurate." "Justify one data collection method used."

PHYSICAL : 1. For a groyne take the measurement from the top of the groyne to the upper level of the sand on the north and south facing sides using a metre rule to the nearest cm. This was done at 5 sites along the groyne at 2 metre intervals using a tape, a systematic sampling method. This was repeated for 3 groynes in total along the beach.

2. Survey a beach transect / profile from the rear of the beach to the shoreline. Two ranging poles was used and a tape to set the poles 5 m apart. This is systematic sampling of the beach profile. A clinometer was used to measure the angle of each 5 m section down the beach.

3. The direction of longshore drift caused by the swash and backwash of obliquely approaching waves was assessed using an orange. The orange was thrown into the sea close to the shoreline and it will float enough to be seen and followed. The movement of the orange as it is affected by the swash and backwash is tracked for one minute and the total distance of longshore drift measured with a tape in metres.

HUMAN : 1. An environmental survey was conducted on the resort seafront tourist area at 3 locations and repeated in the suburbs also at 3 locations. A scale of 1 - 5 was used (1, very poor, 2 poor, 3 fair, 4 good, 5 excellent) for each factor (noise, litter, road traffic, pedestrian traffic, cars parked on the roadside) Or vice versa you'll know if you used 5 as great or rubbish. 1 would mean much noise, much litter, heavy traffic, high pedestrian density and many cars parked at roadside. A higher score would mean better environmental quality. A decibel meter was used to measure noise, an objective measure. Traffic and pedestrians were also measured objectively, but some other environmental factors such litter and cars parked at the roadside were assessed subjectively, basing it on opinion.

2. Conduct a traffic census for (x) minutes at the seafront road to measure the volume of traffic in the resort area. Repeat this in the suburban area.

3. Conduct a pedestrian count on the seafront for (x) minutes to measure the volume of pedestrian traffic in the tourist area. Repeat this in the suburban area.

4b. **POSSIBLE PROBLEMS WITH DATA COLLECTION AND HOW IT MAY AFFECT THE RELIABILITY OF CONCLUSIONS. HOW COULD DATA COLLECTION HAVE BEEN IMPROVED?**

PHYSICAL : 1. Only 3 places on 3 groynes is a small sample. More groynes and more sites along each groyne could have been used to give a more reliable data set and make conclusions more reliable. A random sampling method could have been used to choose the sites along each groyne rather than the systematic one.

2. The fieldwork was only carried out on one occasion on one day. it would have been better to repeat the fieldwork in different seasons throughout the year to see if there are seasonal difference in sand movement / accumulation.

3 A beach profile could have been measured both to the north of a groyne and to the south of a groyne to better assess how sand accumulation varies on each side of the groyne.

4. Using an orange on only one occasion to assess longshore drift is not enough. Conditions may vary on a daily and seasonal basis in terms of wind strength and direction and therefore wave approach, wave height and wave energy. It is average conditions over the year that decide the overall movement due to longshore drift. Also there is little relationship between the movement of an orange and the movement of beach sand.

HUMAN : 1. Assessment of environmental data except for noise (noise meter) traffic and pedestrians (counts) was subjective and depended on students individual views and opinions which may differ.

2. It may have been possible to introduce more objectivity into the parked car factor by counting the number of cars parked on a 100m stretch of road.

3. No sampling technique was used to select the sites used in the environmental quality survey allowing for the possibility of bias on the part of the student / observer. It may have been possible to use a map of the area and random number tables to choose sites randomly.

4. A questionnaire could have been used to assess residents and tourists opinions on environmental quality to give a fuller picture.

5. Students must be trained to conduct traffic and pedestrian counts properly. There needs to be agreed parameters, eg. in a pedestrian count are people on both sides of the road included?55.

5. DATA PRESENTATION : NOTE, this also begins the analysis and interpretation of the data and helps you reach conclusions and test your original hypotheses. “Explain how one data presentation method helped you interpret the data.” “Describe and justify a method you used to present the data you collected.” “To what extent did results and conclusions meet original aims.”

PHYSICAL : 1. A dispersion diagram was drawn for both north and south sides of the groyne to show the different levels of sand built up on each side. The side with the smallest distance to the top of the groyne was the side where sand was accumulated and should have been to the north of the groyne.

This was done for each groyne with the 5 reading from each side and for the total data of 15 for each side of the 3 groynes.

This allowed the median height of the sand to be compared and the interquartile range (spread of the data)

Box and whisker diagrams were also drawn to give a visual comparison of the data from each side of the groyne.

2. The angles for each of the 5 meter sections of the beach profile were used to draw an accurate beach profile. The data was also used to calculate the average gradient of the beach.

HUMAN : 1. A radar diagram was drawn for the 5 factors used to assess the quality of the environment in the tourist area compared to the suburban area.

Each of the 5 factors is located at the apex of a pentagonal diagram. Litter, noise, road traffic, pedestrian density, and on-street parking are shown on the outside of the diagram and a scale of 0 though to 5 is shown on each of the 5 axes. The scores for each factor are joined to complete the radar diagram and a different colour is used for the tourist and suburban areas. Since 5 on the scale is the better environment the larger radar shape indicated the better environment. The visual look of the diagram allows the environments to be compared and average scores can be used as a direct comparison.

6. TITLE OF ENQUIRY AND HYPOTHESES FOR TESTING.

PHYSICAL : An investigation into longshore drift on the Lincolnshire coast at Skegness.

Hypothesis : Longshore drift will occur from north to south building up sand and the beach on the north side of groynes.

HUMAN : An investigation into the environment quality of the tourist area of Skegness compared to suburban areas.

Hypothesis : The tourist area and seafront of Skegness will have a lower level of environmental quality compared to the suburbs.

7. OTHER IDEAS TO BE AWARE OF.

1. You may be asked what secondary sources you used, or what secondary sources could have been used to help your investigation. If the paper asks you what secondary sources you used refer to some of the below:- even if you didn't!

PHYSICAL : Map of the Lincolnshire coast and the North Sea to look at the position of Skegness in relation to the other beaches in Lincolnshire and fetch distances in relation to directions across the North Sea.

Wind and wave data for the Lincolnshire coast from the Meteorological office and wave buoys situated off the coast (Wavenet).

HUMAN : Ordnance Survey maps of Skegness (1:50000 and 1:25000) to locate the tourist areas and roads in the suburbs

2. Anomalies and how they could affect your results and conclusions. Were some readings not what you expect and can you explain them?

3. What your conclusions actually were and whether you proved your hypotheses.

4. Have a few facts and figures from your data or graphs to back up your conclusions. Eg. average environment quality scores of the 2 areas; average distance from top of groyne to the sand on each side of the groyne.