School Site Litter Survey

Focus of Geographical Enquiry

- State the aim of your geographical enquiry

  To investigate litter around the school site

- State the geographical enquiry question

  How does litter vary around the school site?

Location

- Assess the suitability of the choice of fieldwork location (advantages; link to aims; disadvantages)

Advantages of school site:

- Cost – you do not have to pay for transport or cover teachers
- Distance – data can be collected during a lesson
- Safe – there are no risks associated with fieldwork outside the school grounds

Disadvantages of school site:

- Not testing a range of places – rules out a comparison with another site e.g. town centre or outside the local shop, although this could be considered as a follow-up exercise
- Time of day/year will have effect on results, e.g. if litter has been collected during their break or lunch duties

Selecting, Measuring and Recording Data

- What primary data should be collected?
  Work with students to consider and plan:
  - How many survey points should be selected?
  - How will the survey points be chosen? Consider sampling options and pros and cons of different approaches.
  - How to measure litter? This could be numbers of items or using categories
  - When will the primary data be collected? Consider pros and cons of collecting data during a timetabled geography lesson

- Where should it be collected?
  In most cases, sample points will need to be selected (stratified sampling) to ensure a variety of locations
  - Locate survey points on a base map of the school
  - Working in pairs, students make observations and record results from one or more site (consider H&S issues)
  - Take photo of each site

Equipment

Data Collection Sheet
Pen
Base Map of School Site
Camera

Investigation Structure

- Describe what you are going to do to conduct the fieldwork

1. State the aim of your investigation
2. State the geographical enquiry question of your investigation
3. Identify the advantages & disadvantages of the location
4. Select the sampling method you are going to use
5. On a map of the school site, using your sampling method, select survey points (in this example, 9 points were selected)
6. Write a risk assessment for the fieldwork – ideally, do this in collaboration with pupils
7. Record the litter at each survey point, using the categories on the data collection table (be aware of possible H&S issues)
8. Chose a method of data collection, and present your data
9. Describe your results
10. Analyse the data using mean, media, mode and range
11. Attempt to explain the links and anomalies of your results
12. Make a conclusion
13. Evaluate your fieldwork: what went well, even better if and improvements for next time

Survey Point	Location	Biscuit Wrapper	Chewing Gum	Chocolate Wrapper	Crisp Wrapper	Drinks Container	Sandwich Wrapper	Other	Total
1	Front Yard								
2	Front Yard								
3	Front Yard								
4	Courtyard								
5	Courtyard								
6	Courtyard								
7	Back Yard								
8	Back Yard								
9	Back Yard								

Risk Assessment

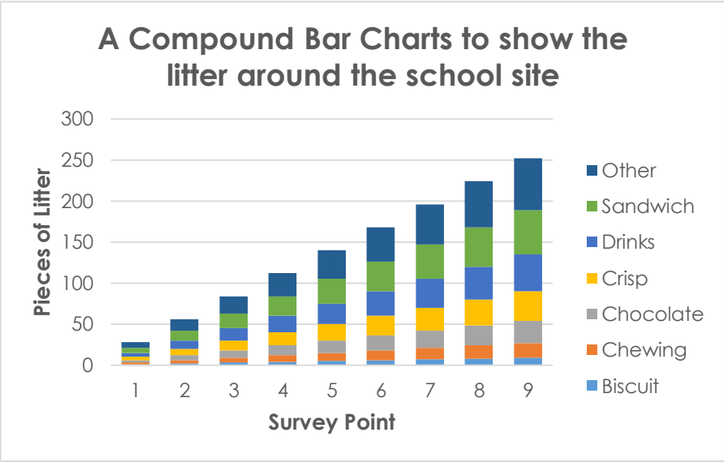
Hazard and Risk	Who may be involved?	Level of risk	Precautions used to minimise risk and why they are used
Equipment	Students	Medium	Check that you have everything you need before you leave the classroom
Weather	Everyone	Medium (variable)	Check the weather forecast and wear appropriate clothes Return if the weather changes significantly Change the data collection day if the weather forecast is poor

Data Presentation

Data presentation ideas:

- Bar graphs – simple and effective
- Located bar graphs (you will need another map of the school site) – this is probably the most effective and most appropriate technique to address the investigation question
- Compound bar graph (see below) – this may be challenging for students. These bars could also be located onto a school plan.
- Isoline map – an ambitious option but can work well in showing patterns
- Pie chart – an alternative to a compound bar graph. Pies can also be located

Example:



These could then be cut up and located on a base map of the survey area

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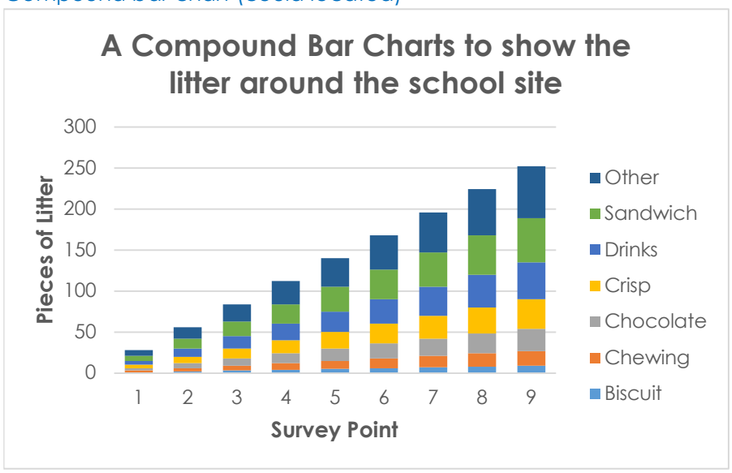
Data Processing and Presentation (cont.)

- Discuss with students the effectiveness of the chosen presentation technique. Consider the accuracy, ease of interpretation, ability to refer to actual figures, clarity, etc. Was the technique appropriate for answering the investigation question? Any problems with the technique?
- Could the technique be improved or, on reflection, should an alternative method have been used?

EXAMPLE

Compound bar chart (could located)



Advantages:

- ☺ Shows each data category in a single bar
- ☺ Displays results of multiple categories
- ☺ Effective visual representation of a large amount of data
- ☺ Each bar could be placed at the survey point the base map to create a located compound bar chart (extension task possibility) – this enables data to be directly linked to location, thereby addressing the investigation directly

Disadvantages

- ☹ May require explanation to fully understand their construction
- ☹ Does not explain causes and patterns
- ☹ Not easy to read values off the graph using the vertical axis
- ☹ Quite a complex skills – for many KS3 students, simple located bars may be more successful

It's important that students assess the success of data presentation techniques, learning lessons for future scenarios.

Satellite photo or School plan (survey points indicated)

ADD AS APPROPRIATE

Description, Analysis & Explanation of Results

- Describe what your results show (what is the overall trend?)
  Identify the site where there is the highest and lowest amount of litter
- Analyse what your results show (use statistical techniques to provide precise information))
  Consider using statistical skills such as mean, median and range.
  For some students, it might be possible to introduce percentage (e.g. 60% of the litter at Site 2 was chewing gum)
- Explain what your results show (give reasons/meanings for your findings)
  Why did certain results occur at certain survey points?
- Can you explain any links between datasets?
  For example, wind tunnels or close to doors to school buildings

  Places where eating/drinking is not allowed
- Can you identify any anomalies in your results? Can you suggest reasons for this? How could any anomalies impact upon the reliability of conclusions?
  Are there any survey points that had a high score but were expected to have a low score?

  Are there any survey points that had a low score but were expected to have a high score?

Conclusions

- What can you conclude from your results? (use evidence to support your conclusion and refer to the aim of the investigation)

  For example, students could choose one of the following statements
  - My investigation showed that litter did vary round the school site
  - My investigation showed that litter did not vary around the school site

Once the students have chosen one of the statements, they need to refer to evidence that supports their statement. They could make links between different surfaces, the proximity to buildings, the time of day, the season (do students go out more in the summer rather than the winter?)

The strength (reliability) of the conclusion should be considered too.

Evaluation

- What went well with your investigation?
  How might the study vary according to different weather conditions?
  How might the study vary with different times of the day/year?
  How might the study vary with different locations and sampling strategy?
- What could have gone better with your investigation?
  How could data collection be improved?
  Would this affect the accuracy of results and reliability of conclusions?
  Would you expect to find similar results in other school sites?
- What would you do differently if you were to do the investigation again?
  Would you use the same survey points?
  Would you change the time of day you did the survey?
  Would you use the same sampling methods?
  Would you use the same data presentation methods?

The key thing here is to encourage positive criticism and to consider how a similar study could be done even better in the future