

Unit 4 - On the road - traffic issues



Based on QCA Unit 12: Should the high street be closed to traffic? (Geography Year 5)

This unit focuses on fieldwork skills. The children are asked to collect and analyse information. This information is then used in a decision-making exercise, which is put into a form that can be presented to a wider audience (e.g. organisations like the local council). The unit suggests investigating how traffic affects a town centre and then making recommendations of how improvements can be made. Our set of lessons suggests that this QCA unit can be taught in a different way.

Traffic can be an issue around any area of industry, including the cement industry. These lessons suggest how children can investigate this real issue in their local community.

- Identify place – use maps to look at location of cement works.
- Fieldwork - collect evidence demonstrating possible impacts of transport on local town. Enquire about issues of transport in the area using a questionnaire put together by the children. Traffic counts recorded in town.
- Fieldwork - record traffic counts in cement works, look at what industry is doing to control impacts of transport.
- Analyse data collected during fieldwork and see what conclusions can be made about the issue of traffic.
- Decide if enough has been done to control any possible impact of transport on the community. Draw up plans for possible improvements.

Lesson 1 - What's going on?

Learning objectives	<ul style="list-style-type: none">• Identify position of local cement works.• Identify routes for delivery of cement from works.• Identify who might be affected by cement delivery traffic.• Outline what effects the traffic might have.• Construct questionnaire to measure possible effects of traffic.
Relevance	To look at location of a cement works and deduce how this may affect the local community.
Vocabulary	Cement Concrete Construction Cement works Location Traffic Cement delivery lorries Routes Issues Questionnaire
Preparation/resources	<ul style="list-style-type: none">• Look at British Cement Association website (www.cementindustry.co.uk) for location of nearest cement works. Download a picture of cement works. Download pictures of lorries used to deliver cement.• Uses of cement collected from BCA website (see above) or other cement manufacturers' websites.• Prepare A4 sheet from a road atlas/web map, to show location of cement works at the centre, with main routes and towns around clearly marked. All at approximately 5 mile radius around cement works.• 3 colours of pencils/markers for each child.• Worksheet 1 for each group of 4/5 children.• If interactive whiteboard – slides of cement works, location, selection of cement delivery lorries. Or download and laminate pictures to use with class.• Either slides or downloaded pictures of cement making process from BCA website (see above).

Lesson 1 - What's going on?

Lesson plan

Introduction

Show the children a picture of your local cement works. Explain that this is where cement is made. Cement is used for many things in our world, from football stadiums to patios. Each house needs 18 tonnes of cement and an average family uses 1 tonne of cement each year (this is the same weight as an average family car). You might want to look at the uses of cement to show the children just how they use so much each year. You will actually see many uses of cement on your school site.

So we all need a great deal of cement and it is all made in the cement works found all over the UK. Once manufactured, cement is taken from a cement works to where it is needed (perhaps to build your school) using special lorries. Some lorries carry cement in big tanks. Other lorries carry bags of cement to be delivered to building merchants or DIY shops (show pictures of these lorries).

Development

Cement for this school, and probably your homes, came from your local cement works (show children picture of your local cement works). Give out maps showing location of this cement works, plus marker pens. Ask children to look at map, perhaps find their school, home, local landmarks..... See who can find cement works location first, all mark the cement works location in RED. On a large version of map, show children location of cement works.

As a whole class, imagine that you are all lorry drivers, delivering cement to your school (e.g. you could be building an extension on the library). Mark the quickest route from cement works to your school in GREEN. Continue to use GREEN, show main routes that lorries might use when they leave cement works. These would be routes to get to major road networks, towns and areas where there are large amounts of construction. Perhaps you know of a major construction project in your area.

Use YELLOW to mark villages and town on these routes, within a 5 mile radius of cement works. Make sure your chosen fieldwork location is marked on the childrens' maps!

On average, approximately 200 cement lorries leave a cement works every day, how might this affect you if you lived in your intended fieldwork location?

- imagine you are sitting on your sofa watching TV....
- imagine you are riding your bike to visit your friend down the road....
- imagine you are late for school and you only have a few minutes left for you to be driven to school to be on time
- imagine the route goes past the front of your school....

(possible issues associated with heavy lorry traffic can include noise, dust, danger and congestion).

- Put the children into small teams with a mixture of attainment levels. Hand out worksheet 1 Ask them to think of three questions to ask someone living in your fieldwork location. These questions need to be about what it is like to live there and whether the cement lorries really do affect the people's lives.

Lesson 1 - What's going on?

Lesson plan (cont'd)

Development (cont'd)

Questions could include:

- Can you ride your bike on the road safely?
- Is the road noisy?
- Do you notice the cement works traffic?
- Do you have problems getting to work because there is too much traffic?
- Do you see lots of lorries every day?

It is best if you try to keep the questions balanced and fair, not too aggressive. Collect all the questions from the children and put them on the board. Need about 5 or six on the final questionnaire, so you may need to vote to find the classes' favourites.




See worksheet 2 for a suggestion for your final fieldwork questionnaire format. This could be prepared after the lesson for use in your fieldwork session (or ask a child to do it in IT). You could add a space on the questionnaire for the person to add any comments about cement works traffic. It would help if the final questionnaire was printed on school headed paper to allow the questioners to see that this is official school coursework.

Plenary

Ask children to put together a list of who they think they should talk to (e.g. post office personnel, people shopping (who do not look too busy), librarians, shop keepers). Rehearse what the children are going to say to people when they approach them to fill in the questionnaire. Prepare what to say if some one is too busy/unwilling to answer questionnaire, or if problems arise.

Worksheet 1 - Questionnaire




What is it like to live in

	YES	NO	NOT SURE
			
Question 1			
Question 2			
Question 3			

Worksheet 2 - Questionnaire

What is it like to live in

Our class is investigating the possible effects of cement works traffic on how you live. Could we please have a few minutes of your time to ask you a few questions?

	YES	NO	NOT SURE
			
Question 1			
Question 2			
Question 3			
Question 4			
Question 5			
Any other comments . . .			
Thank you for your time			

Lesson 2 - Traffic Detectives – an investigation

Learning objectives	<ul style="list-style-type: none"> • Collect and record responses to questionnaires. • Look at cement making process. • Sample and record number (and destinations) of delivery lorries leaving cement works.
Relevance	To collect and record data to use in investigation of a possible environmental issue.
Vocabulary	<p>Despatch Vehicles Destination Tally Total Average</p>
Preparation/resources	<ul style="list-style-type: none"> • Cement Works - identify safe place to count lorries and possibly talk to drivers to ask their destination. Could this data be downloaded from despatch computer system at cement works? Ask before visit. Need worksheet 1, clipboards etc. Stopwatches. • Town – preliminary visit to town to identify place to park and safe routes for children to walk around town. Identify places to carry out questionnaire and where possible, check people are happy to take part and tell them when children will be around town. Identify safe area for children to record traffic. Use existing barriers or where can stand back from road but still have a clear view. Use a large road that could be used by large bulk cement lorries for the traffic count in town (check with cement works if unsure). Need at least one place per group of 4/5 children to complete questionnaire. I suggest you have 1 adult per group of 4/5 children. Prepare emergency procedures (e.g. circulate mobile telephone numbers and meeting points). Put together risk assessment. Need first aid kits for adult supervisors. Questionnaires, clipboards, pencils and stop watches for children. Plus, copies of worksheet 2.

Lesson 2 - Traffic Detectives – an investigation

Lesson plan - cement works (1/2 day)

Introduction

Guided walk around quarry and cement works to show how cement is made. Include a discussion about what the cement is being sent to make and why we need it.

Development

At despatch, divide children into smaller groups (1 adult per group). Children will count number of lorries leaving cement works. Count for a sample time of 10 minutes. Record on worksheet 3 – using tally marks. Repeat this so that each group has recorded three different 10 minute samples. Could divide tally into different types of lorries – tankers, mixers, bag lorries. Any other traffic could be included in their records. Different children in the group could concentrate on different types of lorries and other vehicles. Ask despatch to let you have information about destinations of their lorries. Or, elect a member of each team to collect this information from drivers/despatch staff as the lorries leave. If you find out what weight of cement each lorry holds, this could contribute some interesting real life problems for a maths lesson.

Discuss how the cement works controls the potential problem of traffic in the local area (e.g. routes used, time of travel, environmental performance of engines, lorry design to carry larger weights).

** To save time, you could have half the children doing works tour and half at despatch. They could then be swapped after short break.*

Lesson plan - town questionnaire

Introduction

The aim of this part of the fieldwork is to collect responses to questions on the questionnaires. The children will also be counting cement works traffic, plus other traffic, in town using worksheet 4 and the same technique as at the cement works. This will give an idea of exactly what traffic does go through town.

Development

Divide children into small groups, with one adult supervising each group. One half of class go into town to talk to people and other half count traffic. After a short break, children swap. Assign places for each group of children to talk to people. This avoids the same people being asked to complete questionnaire more than once!

Worksheet 2 - Traffic Detectives – an investigation

How many cement lorries go through town?

Start your stop watch. Count the number of cement lorries. Each time a cement lorry goes past, put a tick in the first row below. Count the number of other vehicles and each time one goes past, put a tick in the first row below. When the stopwatch says 10 minutes has passed, stop counting. Repeat this two more times.

	Cement works lorries	Other vehicles
First 10 minutes		
	Total number =	Total number =
Second 10 minutes		
	Total number =	Total number =
Third 10 minutes		
	Total number =	Total number =
Average number of vehicles =		

Lesson 3 - Examining the evidence

Learning objectives	<ul style="list-style-type: none">• To produce graphs to display information gathered in town and at cement works.• To use graphs to see whether cement works is doing enough to control traffic issues in local area.
Relevance	To look at ways of interpreting data and assess effectiveness of these techniques.
Vocabulary	Graph Bar chart Pie chart Axis Point of view Opinion
Preparation/resources	<ul style="list-style-type: none">• Squared/graph paper, pencils, rulers etc.• IT graphing software.• Childrens' questionnaires and traffic counts completed during fieldwork.

Lesson 3 - Examining the evidence

Lesson plan

Introduction

Discuss fieldtrips with children. Did they enjoy them, favourite bits, share any photographs taken

Give each group of children their completed questionnaire sheets back. What did answers to their questionnaires tell them? What did people think about traffic issues in town? Discuss some of the answers on questionnaires.

Hopefully, there will be different points of view to discuss. Ask the children why that person might have that particular point of view. This will show that people perceive impacts like traffic, differently. What could make one person unhappy, another person would not mind (any examples at school? Noise in playground, football balls being a nuisance in playground?). Traffic might be a problem to some people because of their lifestyle (e.g. if they do a lot of driving in the area). It might affect them because they do not like lorries.

Development

To look at results from questionnaires, use bar charts. Collect data from children, for each question asked (i.e. number of people that said yes, number that said no and number that said not sure). Do this for each question on questionnaire. Assign one question to a group of children and ask them to plot results on a bar chart (X-axis for no/yes/not sure, Y-axis for number of people). The title for each bar chart will be the question from the questionnaire. The bar charts will easily show which answer was the most popular for each question asked. Collect the most popular responses from each bar chart and write on board. Is there a definite trend in people's point of view? Is cement works traffic a problem to people?

Using their traffic count results, children plot graph of number of cement lorries leaving works during visit (X-axis for each 10 minute sample, Y-axis for number of lorries). Some children might want to do additional graphs/pie charts to show the different types of lorries and their destinations on the computer. Do a second graph of the traffic recorded in town (X-axis for type of traffic and Y-axis for number of vehicles).

Plenary

Gather all graphs together. Do they show any trends? Is it easy to see what they show? Might the techniques of information gathering been unfair in any way (e.g. time of day, place standing to count vehicles, people questioned etc).

Lesson 4 - The solution

Learning objectives	<ul style="list-style-type: none">• To use graphs from lesson 3 to make decisions whether cement works traffic is a problem to local community or is it under control.• To debate issue.• To make a conclusion about the issue and any plan of action to improve the situation.
Relevance	To use the children's own data to make a decision about a real environmental issue.
Vocabulary	Nuisance Issue Solution Public liaison meeting Discussion
Preparation/resources	<ul style="list-style-type: none">• Graphs from previous lesson.• Rough paper to plan speeches for role play.

Lesson plan

Introduction

As whole class look at graphs from lesson 3, showing the results of the questionnaire. What do they show about what people think about cement works traffic? Did many people think that traffic was a problem? What were these problems? *[this makes it more into an opinion rather than a fact]*

Look at graphs showing actual traffic recorded in town. Does this confirm or contradict what people think about traffic? Are there lots of cement lorries going through town?

Look at graphs showing number of lorries leaving cement works. Compare this to number seen in town. Are there more or less lorries in town? Why might this be?

Has the cement works done enough to control any possible nuisance of lorries in its local area? What measures do cement works take to control traffic? Did they talk about during your visit to the cement works? Most cement works ask that their lorries to take routes that do not cause a nuisance. They use bypasses where possible and avoid sensitive or very narrow roads. However, this is not always possible and there may be areas where there are still problems.

Development

If there were some people unhappy in the questionnaires, or any children felt unhappy, about level of cement works traffic in some places, ask them to write a letter to the cement works manager. This letter needs to include what people thought and any evidence (either anecdotal, or from children's traffic counts) to back up this opinion. The letter should also suggest solution for these issues.

Or, have a role play similar to a public liaison meeting. Public liaison meetings are held regularly between cement works staff and the local community. Anyone can come along to these meetings and discuss any issue with cement works staff. Children could be given roles of cement works staff

Lesson 4 - The solution

Lesson plan (cont'd)

Development (cont'd)

(e.g. manager, traffic manager, environmental officer, public relations officer etc). The remainder of the class could represent people in the area, some happy about traffic issues, some unhappy. These meetings normally start with the cement company people presenting what they are doing about a certain issue, in this case it would be traffic. Then anyone else from the community can stand up and have their say. The cement company can reply or make a note and promise to look into a problem. Using rough paper, children could write out a script of what they want to initially say in the meeting. They could then improvise, or you could give them a pause to collect and write down their thought before replying. Try to get a discussion going and see what happens!

Plenary

Ask children to come out of role. Ask them to consider all evidence from graphs, questionnaires, plus what they saw and heard at the cement works. Are there any issues with the cement works traffic that need solving, or is it all under control? It is interesting to highlight any difference of opinion and discuss why this might be, plus why it is important to listen to all points of view.

Finally, go back to the maps in lesson 1. Plot the best route for a cement mixer lorry to travel from the works to deliver cement for some building works at your school. This route needs to have the least number of issues for local people. Is there a route for the lorry to travel along that will not upset ANYONE?

20% of all cement manufactured in the UK is transported using rail and river barge. This avoids all issues concerning road traffic and is a lot more acceptable by environmental organisations. The industry is aiming to increase the amount of cement it can transport in this way as part of its efforts to become more sustainable. What do the children think of this? Why can't all cement be transported by rail/barge? Why will we always need roads to take cement to the sites where it is needed, or the DIY shops? How many DIY shops have you seen on a rail network?



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