



## Unit 2: Clean Air

Each of us is entitled to clean air and to know that the air we breathe is not going to cause us harm. By international standards, air quality in Ireland is very good mainly because of our geographic location at the edge of the Atlantic Ocean. However, pollutants from road traffic and household fires, especially in urban areas, pose the main threat to air quality in Ireland.

### Teaching Point

The growth and expansion of traffic in our towns and cities have negative results and require management. During the winter months, smoke from household fires can have local impacts.

### Outcomes

Students will:

- Evaluate the traffic situation in the local community.
- Identify the main sources of the problem.
- Identify measures that can be taken to address the problem.
- Identify their own strategies to solve traffic problems in their own area (or the nearest urban area with traffic issues).
- Alternatively students could devise a survey of people's habits in relation to household fires e.g. do they burn smokeless fuel, do they ever burn rubbish?

## Eco Eye Clip and Comprehension

**(NB remember to print and prepare these in advance).**

### Greener commuting to school and work

Air pollution from particulate emissions from road traffic is the biggest threat to our air quality. There are lots of reasons to get out of the car - congestion, safety, health and climate change. In





this clip Duncan looks at what schools, companies and a hospital are doing to reduce their travel-related environmental impact.

**Watch the clip and complete the comprehension exercise.**

## Activities

Students will build a picture of the potential for use of sustainable modes of transport to school. Ask students to estimate how far they live from school and how they travel. Ask students that walk or cycle to school how long it takes and the approximate distance they travel. The class discuss what they consider to be a reasonable distance to walk or cycle to school (it takes about 10-15 minutes to walk a kilometre).

### 1. Map work

- Students can work in pairs or small groups.
- Each group will need: A compass and a copy of the 1:50,000 OS map of the area within about a 10km radius of your school (print out from Scoilnet maps <http://maps.scoilnet.ie/> or EPA maps <http://maps.epa.ie/>).
- Students agree the distances they considered to be reasonable walking and cycling distances.
- Students draw three concentric circles with the school at the centre to illustrate these zones. The first could be for example, within a 1 - 2 km radius of the school (easy walking distance), the second within a 3km radius of the school (reasonable walking or cycling distance) and the third within a five km radius of the school (cycling distance).
- Highlight any public transport routes (buses, trains, DART, Luas) close to the school.
- Highlight traffic 'hotspots' (areas likely to be very congested at rush hour).
- Highlight cycle paths or safe cycle routes. Use the map (in leaflets, posters or a PowerPoint presentation) as part of a campaign to highlight greener commuting options





for staff and pupils. Student can find out more about the fourth Green Schools theme of Travel at <http://www.greenschoolsireland.org/>.

## **2. Individual research - Journey to work survey**

Students are asked to complete a survey of the journey to work patterns of ten neighbours. A class group of 20 students will return up to 200 completed responses. The survey should ask each respondent;

- his/her place of work
- his/her mode of transport
- the number of passengers (if a car is used)
- his/her attitude to traffic and the time spent travelling
- any improvements or alternatives he/she could suggest

The students design a short questionnaire and complete the survey as homework.

## **3. Group work**

The results collected by each student in the class can be combined. Journey to work data should then be analysed according to distance, which can be calculated using maps and classified using thresholds e.g.

- travelling up to 1 km
- travelling between 3 to 5 km
- travelling between 5 and 10 km
- travelling over 15 km

The other questions can be classified and each variable answer can be expressed as a percentage of the total number of respondents. These results should be expressed as graphs. A number of conclusions can then be drawn relating to distances travelled to work, mode of





transport and the vehicle occupancy. Each student should consider the sustainability of the situation and focus on alternatives like those illustrated in the clip.

Alternatively, if a local company employing a large number of people is agreeable students could conduct the survey there and focus on developing a plan for greener commuting for presentation to the company.

#### **4. Investigation fieldwork**

Identify a traffic management issue in your community which you have discussed and explore it in more detail.

Remember the steps!

**Step 1:** Identify key aims or formulate a hypothesis

**Step 2:** Identify and gather the background material required

**Step 3:** Identify the main methods of gathering your information

**Step 4:** Identify the main results and draw a conclusion

**Step 5:** Identify some achievable actions, which may help the situation

*Investigation Title: Traffic and parking in our area*

*Step 1: Aims*

- To identify the traffic flow near your school over 3 sample days.
- Classify the types of vehicles travelling in each direction across two sample hours on each sample day.
- Count the number of occupants in each passing car.
- Count the number of available parking spaces and survey their usage during the sample hours.
- To test the hypothesis that the majority of vehicles are occupied by the driver only.





*Step 2: Preparation and background materials*

- Gather any figures, studies or traffic surveys that are available from the Local Authority in your area,  
<http://www.environ.ie/en/LocalGovernment/LocalGovernmentAdministration/LocalAuthorities/>.
- Check the Central Statistics Office website for up to date traffic statistics [www.cso.ie](http://www.cso.ie). There is travel to work data available in the Environment section of the Students Corner.
- Check the EPA web site [www.epa.ie](http://www.epa.ie) for information on traffic and air quality.

*Step 3: Methods of data gathering*

- Pick safe points from which to conduct your survey.
- Pick your sample days at random from Monday to Friday.
- Pick your two sample hours per day at random.
- Draft your counting sheets for the traffic survey (sample sheet provided).
- Draft the sheet for the parking survey (sample sheet provided).
- Divide into groups and count the different vehicles as they pass your survey point. One or two students should call out the type of vehicle and another should enter the result on the recording sheet. Another group should work on the occupancy rate; one student should estimate and call out the number of occupants in the vehicle while another student records the information on the recording sheet.
- Another group of students should count the number of empty car parking spaces at the beginning of each sample hour. They should note anything of interest i.e. poor parking practice, double-parking, areas which are particularly busy, provision of disabled parking or disabled parking used by able-bodied drivers, and areas that appear to have all day parking.





*Step 4: Results and conclusions*

- Back in class divide into groups and work out the basic results. One group should count and classify the vehicles. Work out percentages for each from the total number of vehicles recorded.
- Another group should work out the statistics for the occupancy rate showing the numbers of occupants from vehicles with a driver only, up to vehicles with more than 5 occupants.
- Another group should work out the percentage of available parking spaces during the survey hours.
- All results should be graphed.
- Now draw conclusions about:
  - Traffic flows and vehicle types
  - Vehicle occupancy rates - is the hypothesis proven or not?
  - Parking availability
- Make recommendations if you think improvements are required.

*Step 5: Action*

- Make a display of your results and exhibit them in school or in a public building.
- Send your results to the Local Authority with your suggestions for change.
- Write a report for the local newspaper highlighting your findings and recommendations.
- Invite a local representative to your class to discuss the issue.





## Parking Space Survey

Date:

Time:

Location:

Student's name:

**Total number of spaces in area being surveyed:**

**Number of spaces available at start of hour one:**

**Number of cars parking in hour one:**

**Number of spaces available at start of hour two:**

**Number of cars parking in hour two:**

**Notes on any relevant observations:**

Poor parking practice, double-parking, areas which are particularly busy, provision of disabled parking or disabled parking used by able-bodied drivers, and areas that appear to have all day parking.





## Traffic Survey Record Sheet

Date:

Time:

Location:

Student's name:

Number of occupants per vehicle:

1	2	3	4	5 or more







**Number of occupants per vehicle:**

1	2	3	4	5 or more





Type of vehicle:

Car (up to 5 seats)	Car (5-7 seats)	Van - truck - lorry (commercial vehicle)	Mini bus	Bus

