Resource activities contents

Section 3 – A healthier world

3.1 My role in the community

TravelSmart Objectives

To recognise the groups that make up communities, identify the membership of community groups and examine the idea that the actions of individuals within a community group impact on the community as a whole.

To recognise the importance of individual contributions towards creating better communities through identification of personal community groups and responsible and irresponsible behaviours.

TravelSmart Outcomes

Students will be able to:

- understand that individuals belong to different groups and that groups are important in building healthy communities
- identify the groups they belong to and their roles within these groups
- understand what constitutes responsible or irresponsible behaviour
- establish a link between the actions of individuals and the positive or negative effect of their actions on the community
- understand that actions of individuals can make the community a better place.

JUNIOR PRIMARY – 3.1 Learning activities

Discussion

Ask students to define their understanding of the word 'community'. Most people are members of many different communities, including:

- family
- sport
- school
- church
- neighbourhood

Focus questions:

- What groups and individuals make up your local community?
- Are the communities connected? In what ways?
- What is your role in the communities that you belong to?

Activity 3.1 JP – Community groups

Students use the Activity to record and label the communities they each belong to, then compare their work with a partner.

- Do they share any groups in common?
- How are the community groups different?
- What does this tell us?

Concept map

Build a concept map that explores the good and bad things that are done by groups in our community. Consider the work of volunteers, sporting and hobby groups, school groups and individuals.

Section 5 – Resources – 5.1 Thinking and teaching strategies

Activity 3.1 JP – My role in the community (2 pages)

Define 'community', 'responsible' and 'irresponsible'. Discuss with students the idea that actions of individuals impact on the community. Ask students to categorise responsible and irresponsible behaviours in relation to the effect on the community. These could include:

Responsible	Irresponsible
• walking dog on a leash	• speeding cars
• picking up litter	• drawing graffiti
• maintaining gardens and walkways	• noise pollution

Students draw and label responsible and irresponsible behaviours and list things that they could do to make their neighbourhood a better place in which to live.

Display

Collating the information from the Activity, ask students to design posters for display in the community which show responsible community activities.

Role play

Students work in small groups to present a role play depicting responsible and irresponsible behaviour and the result of each action.

MIDDLE PRIMARY – 3.1 Learning activities

Discussion

In understanding the impact of behaviours on communities, students explore the consequences of various actions. The local Council would have information to assist research.

Focus questions:

- Are there any positive consequences for people who actively care for our community? For example: the 'Adopt-a-Highway' initiative, the work of service clubs, volunteers.
- What consequences are in place for people who draw graffiti on walls and in public areas?
- What are the laws and consequences regarding careless behaviour by drivers? For example, speeding, excess exhaust emissions.
- Are there any consequences for people who drive carefully and safely?
- How would you define responsible and irresponsible behaviours?
- What consequences should apply to irresponsible and responsible behaviours?

Display

Most members of the class, or their parents or caregivers, will belong to at least one community group. Ask them to research a group they belong to – the purpose of the group, the place and time when it meets, the community work it performs.

Encourage students to collect brochures and pictures of their group. Many community groups belong to statewide or national organisations – their websites will provide more information.

Featuring work by all students, build a display in the classroom, school reception area or the local library. Invite the organisations to provide more brochures for people to take from the display.

www

For example,
Scouts Association of Australia
http://www.scouts.com.au/

Outward Bound
http://www.outwardbound.com.au/

Landcare Australia
http://www.landcareaustralia.com.au/

Activity 3.1 MP – Behaviour in the community

Brainstorm types of responsible and irresponsible behaviours and how they impact on the community. Are there any ways that the irresponsible behaviours could be changed so that they become responsible community behaviours? For example, graffiti artists could be involved in wall decoration as part of a street art program.

Students complete the Activity, giving reasons for their decisions.

UPPER PRIMARY – 3.1 Learning activities

"Alex Jackson: Grommet" by Pat Flynn

Alex is a skateboarder with a reputation. Selections from this book would be good to read in class, to initiate discussions about the issues of skateboarders and skateboarding in communities.

Focus questions:

- What is their reputation?
- Is it deserved?
- If you are a skateboarder what do you want people to think of you?
- How does your behaviour reflect on the whole group of skateboarders in your community?
- What do the members of your family think of skateboarders?
- In some communities, skateboarders have met with members of the local council and developed plans for building a skating park. Is this a good idea? Why or why not?
- What do you think this would do for the reputation of skateboarders in the community?
- Access and read reviews on the website listed below.
- After reading the book, do you agree with the reviews? Why or why not?

www

Student reviews of Alex Jackson: Grommet
http://www.teachers.ash.org.au/ozreading/yara/senior_reviews/alex_jackson.htm

Discussion – The car and the community

Speeding cars can have an impact on a personal level in regard to safety but they also affect the community. When people speed in our local areas we have unsafe streets and this means that less people are walking, cycling or spending time in community spaces.

Organise students to work in groups to explore this statement. Consider it from the points of view of residents, other drivers, workers, pedestrians, cyclists and the drivers of speeding cars. Can they think of responsible options for the drivers?

Form a panel to discuss the views fielded by 'representatives' of each of the groups monitored above.

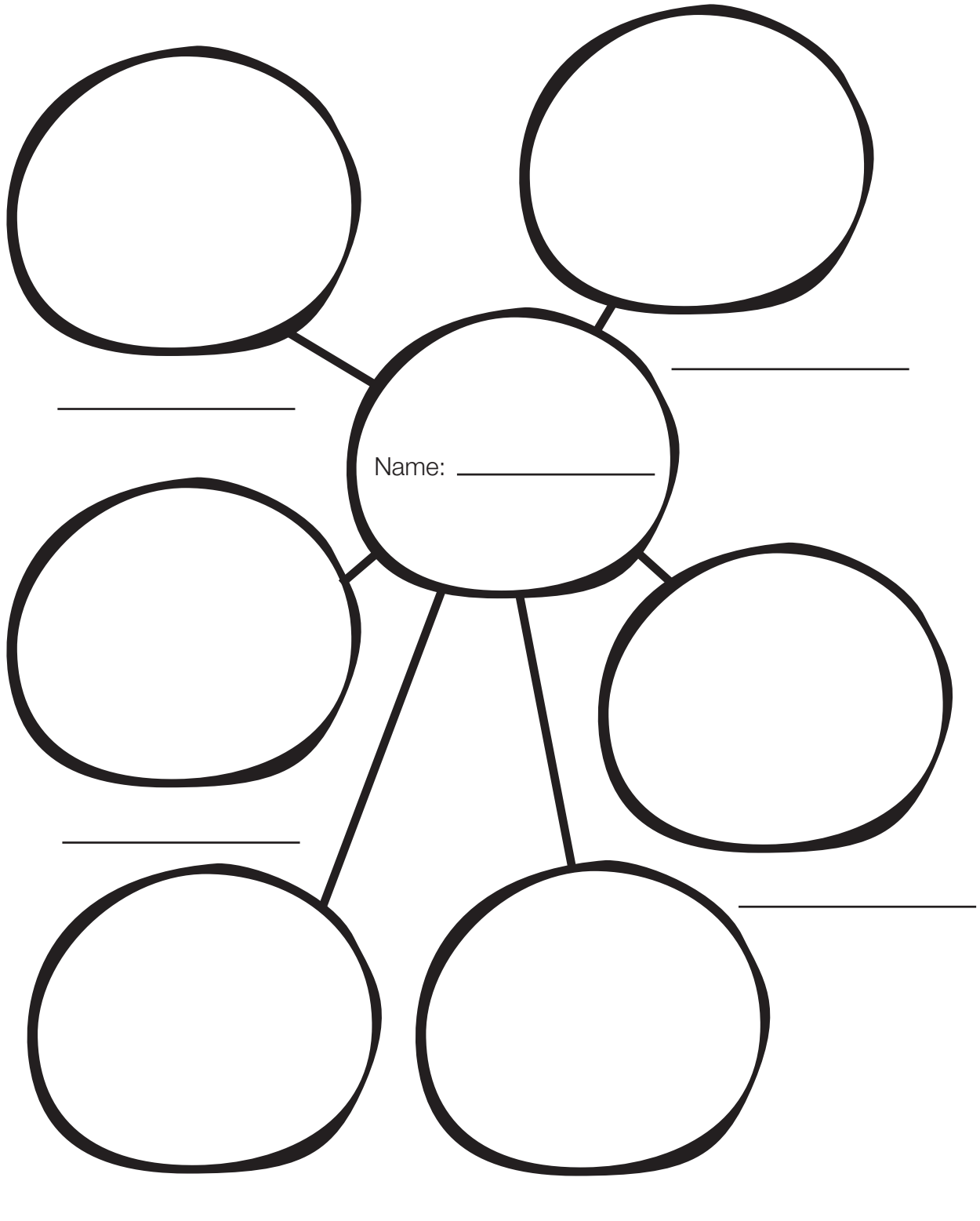
Debate/exposition

'That skateboarding (or scooters or skating) in public places should be banned'

Section 5 – Resources – 5.1 Thinking and teaching strategies

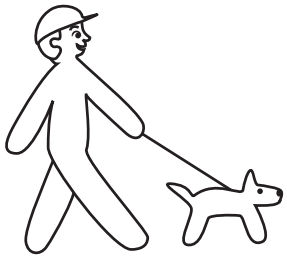
Activity 3.1 JP – Community groups

In these circles draw and label the community groups you belong to. Compare your diagram with a friend. What differences are there?



Activity 3.1 JP – My role in the community

In the boxes below draw two responsible community behaviours and write a sentence to explain each drawing.



Activity 3.1 MP – Behaviour in the community

Look at the illustrations below. They show responsible and irresponsible behaviour in the local neighbourhood.

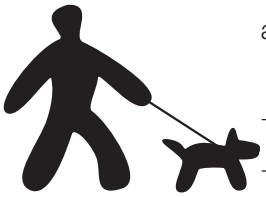
1. Beside each action mark with a tick ☑ or a cross ☒ those which are responsible actions and those which are irresponsible.
2. Add reasons for your decisions.

Drawing graffiti ☐

Garden maintenance ☐

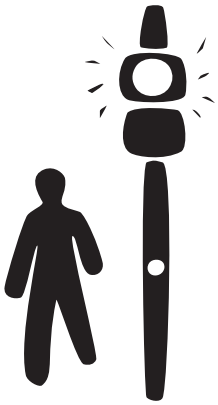
Speeding cars ☐

Noise pollution ☐



Walking a dog with a lead ☐

Using recycling bins ☐



Crossing at the lights ☐

Dropping litter ☐

3.2 What is fitness?

TravelSmart Objectives

To recognise the activities they undertake to maintain a healthy body and to explore the relationship between regular exercise and general fitness.

To introduce pulse rate, how to locate pulse points, measuring pulse rates before and after exercise.

To understand that fitness can be measured by recording pulse rates before and after aerobic exercise and then after a rest period.

TravelSmart Outcomes

Students will be able to:

- recognise the link between fitness and heart and lung function
- give examples of how they keep fit and why they do
- name and locate pulse points on their own body
- explain what a pulse rate is and how it is affected by exercise
- measure and record their pulse rate
- understand the impact of regular exercise on the heart-lung system, and the importance of warming up and cooling down as part of an exercise routine.

JUNIOR PRIMARY – 3.2 Learning Activities

Research – Body parts

Use charts, models and other resources to learn about various parts of the body, focussing on body structure, heart and lungs. Explore breathing in and out, various ways that the body can move.

Activity 3.2 JP – My body

Display – Our bodies

Use large sheets of blank newsprint paper (end rolls are available from newspaper printers) or join spreads of newspaper with tape to make a sheet large enough for a child's body outline to be traced – one for each child. Students can trace each other, create labels for body parts and display the 'bodies' to make a frieze around the classroom. Organise the 'bodies' in height order, to encourage discussion about differences in bodies. Add hair, nails, facial features as an ongoing collage – students could suggest appropriate materials to use.

Class discussion – Linking our bodies and fitness

Being fit means that our bodies have to do exercise in order to work properly and be healthy.

Focus questions:

- What parts of our bodies do we use to help us get fit?
- What does exercise have to do with the heart and lungs?

Activity 3.2 JP – What is fitness?

Ask students to think about two activities that they do to keep fit. Students then illustrate and write a sentence about each activity and complete the true or false statements based on the class discussion focus questions.

Where's my pulse point?

Show students how and where to find a pulse.

Students locate the pulse points on their own bodies. They should use their index and middle fingers to feel the pulse correctly. They will need some time in which to locate the best pulse point and be able to find it quickly.

Complete these activities, recording the pulse count each time:

- count their pulse rate for one minute, while sitting quietly
- run on the spot for a count of 30, then find a pulse point and count again
- rest for about 10 minutes
- run around the oval for a period of 10 minutes, then repeat the count.

Focus questions:

- What have you discovered?
- Why do think this has happened?
- Why do people have different pulse counts?
- Compare pulse counts.
- How do you feel?
- Could you do more exercise?
- How hard is your heart working?

Use a stopwatch for accurate timing.

Activity 3.2 JP – Finding a pulse

Complete the Activity. Encourage students to try different levels of exercise and count their pulse and record the count. They could develop a table to record their findings, or create a simple graph. They may wish to record the count of different members of their family, using the correct method and pulse points.

ICT idea

Develop a spreadsheet to record counts and graph the result.

MIDDLE PRIMARY – 3.2 Learning Activities

Class discussion

Discuss with students the meaning of heart rate or pulse.

Focus facts:

- Every time your heart beats, it sends blood through your arteries. This wave of blood can be felt as a pulse.
- It can be felt in places where the arteries are close to the skin – on the neck, at the temple, on the wrist, behind the knees, just above the elbow
- The pulse rate is also referred to as the heart rate.
- Your pulse rate is the number of pulses counted in one minute.
- Exercise makes the heart stronger.
- In a fit person, a strong heart means that their pulse rate slows to its resting rate after exercise much quicker than that of an unfit person.
- A fit person can recover from exercise quicker than an unfit person can.
- A pulse during exercise will be quicker than one that is resting because the heart is working harder to provide enough oxygen for muscles to function.

Students develop a true / false question sheet.

Research

Find out more about the heart – how it works, how it keeps on beating – without missing a beat – for your whole life.

www

Dialogue for Kids/Blood has heart and pulse information
http://www.idahoptv.org/dialogue4kids/season4/blood/links.html

Class discussion

Being fit means that the heart and lungs can pump oxygen to the muscles.

For example, when running, leg muscles need oxygen to keep going. If the heart and lungs cannot pump enough blood, legs get tired and running stops.

Discuss with students the definition of 'fitness'. Add it to the Glossary in their TravelSmart Log. (See Section 2 – Tuning in – 2.1 A changing world – Middle Primary)

Focus questions:

- Why is it important to maintain a healthy heart and lungs through exercise?
  (To prevent heart disease and related illness, for breathing, to improve ability to participate in sport, general wellbeing)
- Why do we need oxygen to be carried to the muscles?
- What happens when we don't get enough oxygen?
  (We run out of breath and our muscles get tired or become cramped)
- What activities do you participate in that help to maintain or improve fitness?
- What is cardio-vascular?
- How often should we exercise to keep fit?

To increase aerobic fitness, the cardio-respiratory (heart-lung) system must be strengthened. The heart, like any other muscle, must be exercised enough to strengthen it but not to cause damage. The heart needs to be exercised for approximately 10 minutes or more at a time, on a regular basis. The exercise does not need to be difficult – you should be a little puffed but still able to talk.

Slow jogging is better for increasing fitness than a fast sprint. Why?

Activity 3.2 MP – What is fitness?

Students use this Activity to interview four different people about their perception of fitness and what activities they participate in. They could choose to interview their peers, or take the Activity home and interview family members. Surveying participants of different ages would result in interesting information.

Contact the media to see if they are interested in covering the display.

ICT idea

Using a spreadsheet program, graph results. Compare / contrast /similarities / differences / advantages/ disadvantages.

Collage

Students brainstorm all aspects of fitness and create a collage of the positive aspects of fitness on their lives. Organise a display of this work in the local neighbourhood, in relation to International World Heart Day – the last Sunday in September.

Heart Foundation

http://www.heartfoundation.com.au/heart/index_fr.html

What does the Heart Foundation do? Why do we need a Heart Foundation?

Brainstorm

Class or group brainstorm on the topic of 'our bodies are like machines'. Explore the concept of what happens when machines are not used often or cared for properly.

Section 5 – Resources – 5.1 Thinking and teaching strategies

Design

Students design a machine that measures and records pulse count.

UPPER PRIMARY – 3.2 Learning Activities

Activity 3.2 UP – Finding a pulse

Revision of pulse, pulse rate, pulse points. Students work in pairs to complete the Activity. Discuss quicker ways of measuring pulse (count pulse for 15 seconds and multiply by 4 to get the pulse for a minute).

To check pulse rates, students try some different activities; walking, running or skipping for a set time, walking up stairs, running up a hill. Also ask students to check how quickly their pulse rates return to resting rate.

ICT idea
Graph results using a spreadsheet program

Class discussion

Revisit the concepts covered in the previous Activity. Discussion points leading to the completion of the next Activity include:

- To increase fitness, the cardio-respiratory (heart-lung) system must be strengthened.
- The heart needs to be exercised for 10 minutes or more at a time.
- Exercise does not need to be difficult. If you are puffing but are still able to talk, this is a sign of effective exercise.
- Warming up before exercise is important.
- After exercise, it is very important to 'cool down' properly. This means slowing down then stopping, with stretching before and after exercise to prevent muscle soreness.

Activity 3.2 UP – How to increase fitness (2 pages)

Students answer the questions, using information given and accessing resources to extend their understanding of the topic of fitness. Page 2 of the Activity requires students to measure and record their heart rates both before and after exercise and over a set period.

In order to increase fitness, a recommended time frame is to exercise three times a week over a fortnight. Students should expect to see a slowing of the resting heart rate and more rapid recovery after exercise.

Discuss and answer the questions at the end of the record page.

Take a breather

Students will measure their lung capacity, using a calibrated glass bottle or jar to measure and represent the amount of air that their lungs can hold. They can record their work by writing a procedure.

Section 5 – Resources – 5.3 Text types

Instructions:

- Calibrate a large bottle or jar. This can be done by using a measuring cup to add 400 ml of water to the bottle at a time. Mark the water level after each addition with a marker or masking tape.

- Fill the bottle completely with water. Put the cap on or put a hand over the opening. Invert the bottle into a sink or bowl that is three quarters full of water. Make sure that no water escapes from the bottle.
- Take the cap (or hand) off the top. Insert a length of tubing into the bottle, underwater. If any air gets into the bottle, work the tubing into the air cavity and suck on the free end to the tubing to draw the air out. Stop sucking as soon as the water enters the tubing that is in the jar and pinch the tubing to stop any further water flow.
- Take a regular breath. Then exhale through the tube. Blowing into the tube forces water out of the jar. When the lungs are completely empty, pinch the tubing.
- Lung capacity is the amount of air in the jar. Read the volume from the calibration marks.
- Try measuring a regular breath again. (Each time a test is done, the bottle must be refilled with water, the end of the tubing cleaned with water and disinfected with a cotton ball soaked with rubbing alcohol)
  - How do the two tests compare?
  - How do the tests compare with those of other students in the class?
- Do the test with a very, deep breath. This should give a reading for maximum lung capacity. How does this compare with the other breaths recorded?

Class discussion / concept map

Organise class discussion groups to develop concept maps around the issues of good lung capacity, fitness and lung capacity, the importance of breathing fresh air, the implications of various forms of air pollution, how a polluted environment can cause problems even for fit people. Topics could be assigned for individual groups.

Section 5 – Resources – 5.1 Thinking and teaching strategies

Research – Initiatives

Community health is becoming increasingly important to our governments. Surveys indicate that today, people are more overweight and less fit than they were in previous years. These factors are costing the nation many thousands of dollars in medical expenses, every day.

Commonwealth and state budgets are allocating money for health initiatives to ensure that people become fitter and healthier.

Access the Australian Bureau of Statistics website, or use the Year Book of Australia, to discover some health facts about Australians and fitness.

Many websites are able to explain health initiatives – Active8 and Active for Life are only two of many. Students research and prepare a plan showing how they could start one of these initiatives in their local area. Think about the reasons for starting the initiative, how much it would cost, where it would be held, who would be involved, what sort of activities would be offered, and how to publicise it.

Share plan with the class as an oral presentation and include pictures, brochures and application forms for interested people to use.

www

For example,

Active8 website – logos of involved community organisations
http://www.active8.on.net/site/programs.htm

Main page Active8
http://www.active8.on.net/index.html

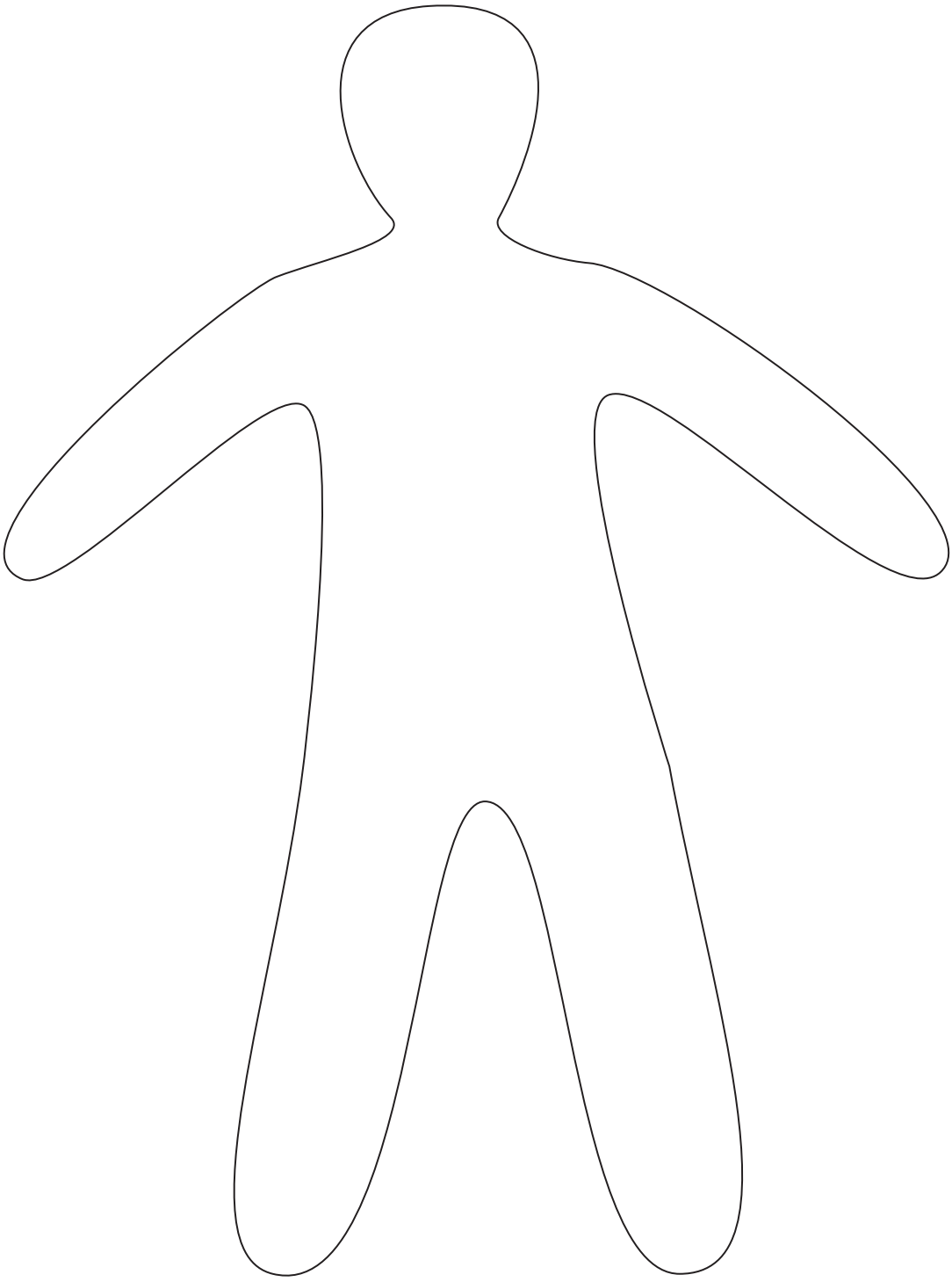
Active program – press release
http://www.ausport.gov.au/fulltext/2003/ascmedia/20030326.asp

NSW Active for Air Environment Protection Authority
http://www.epa.nsw.gov.au/air/activeforair/index.htm

Victoria Active for Life
http://www.dhs.vic.gov.au/phd/activeforlife/programs.htm

Activity 3.2 JP – My body

1. Name as many body parts as you can.
2. Add organs and label them.

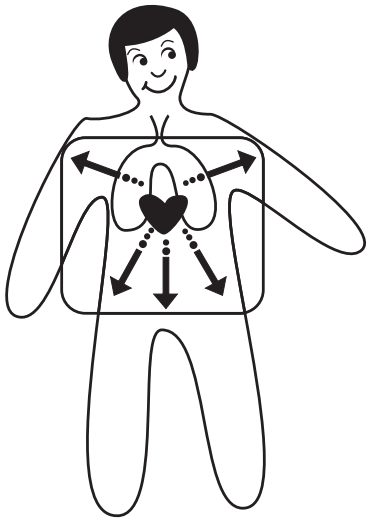


Activity 3.2 JP – What is fitness?

1. Draw two activities you do to keep fit.

2. Help Penny decide if the following statements are true or false.

   ✓ Tick one of the boxes for each statement.



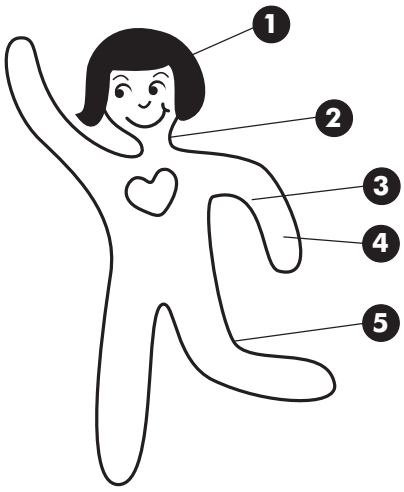
	true	false
The heart and lungs pump oxygen to the muscles.	☐	☐
Exercise is bad for our health.	☐	☐
When our muscles don't get enough oxygen they become tired.	☐	☐
To keep fit we should exercise regularly.	☐	☐
We can exercise once a month to keep fit.	☐	☐

Activity 3.2 JP – Finding a pulse

What is a pulse?

Every time your heart beats it sends blood to your arteries. This wave of blood can be felt as a pulse.

1. Label the five pulse points.



2. My resting pulse rate is _____ beats per minute.

3. Write a sentence to explain what happened to your pulse after exercising.

_____

_____

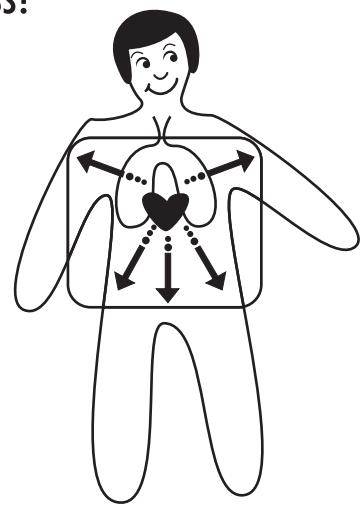
_____

4. Complete these sentences.

heart rate	**faster**	**stronger**	**five**

1. Pulse rate is known as _____ _____ .
2. There are _____ pulse points.
3. Regular exercise makes our heart _____ .
4. During exercise, our pulse rate gets _____ .

Activity 3.2 MP – What is fitness?



Being fit means that the heart and lungs can pump lots of blood which carries oxygen to muscles. For example, when you run your leg muscles need oxygen to keep going. If the heart and lungs cannot pump enough blood, legs get tired and our running stops.

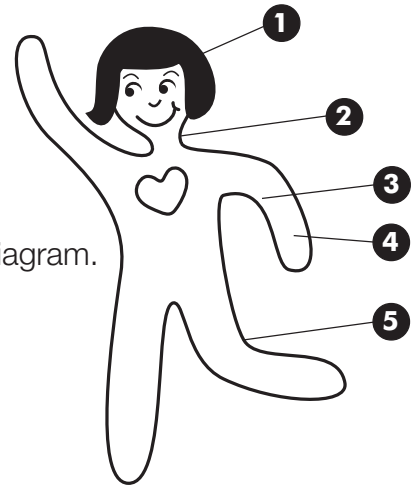
1. Fitness Interview

Interview four people about their ideas on fitness. You can use the following questions or design your own questionnaire.

- *What does keeping fit mean to you?*
  - Person 1: _____
  - Person 2: _____
  - Person 3: _____
  - Person 4: _____
- *How do you keep fit?*
  - Person 1: _____
  - Person 2: _____
  - Person 3: _____
  - Person 4: _____
- *How would you like to improve your fitness?*
  - Person 1: _____
  - Person 2: _____
  - Person 3: _____
  - Person 4: _____

2. Think of 3 activities that you could do to improve your fitness. Draw and label them on the back of this sheet – include a list of equipment you would need and the cost of each activity.

Activity 3.2 UP – Finding a pulse



What is a pulse?

Every time your heart beats it sends blood to your arteries. This wave of blood can be felt as a pulse.

Label the pulse points indicated in the diagram.

1. _____
2. _____
3. _____
4. _____
5. _____

Research, locate and label at least two more pulse points on the human body.

_____

_____

What is your heart rate?

1. Working with a partner, experiment to find as many pulse points as possible.

2. a. Count your pulse for 1 minute or you may find it easier to take your pulse for 15 seconds and multiply it by 4.

   _____ beats per minute

   b. Now count the beats after the following activities:

   Lying down _____ beats per minute

   Sitting _____ beats per minute

   Running on the spot for 2 minutes _____ beats per minute

   One minute's rest _____ beats per minute

3. Find the resting pulse of four other people. Record your results.

Name _____ beats per minute _____

Name _____ beats per minute _____

Name _____ beats per minute _____

Name _____ beats per minute _____

Activity 3.2 UP – How to increase fitness

To increase aerobic fitness, the cardio-respiratory (heart-lung) system must be strengthened. The heart, like any other muscle, must be exercised enough to strengthen it but not enough to cause damage. The heart needs to be exercised for 10 minutes or more at a time. The exercise does not need to be difficult – you should be a little puffed but still able to talk. Slow jogging is better for increasing fitness than a fast sprint. After exercise it is very important to cool down properly. This means that you should walk around slowly after a fast run and do some gentle stretching exercises.

1. To find your own level of fitness, record your results in the fitness test below.

Week	A. Resting heart beats per minute	B. After 3 minutes of step-ups, 3 minutes of jogging and 4 minutes of walking	C. After 3 minutes of rest	Fitness Score ie B minus C	Time in minutes for heart to recover to resting heart rate
Date Time 1					
Date Time 2					
Date Time 3					
Date Time 4					
Date Time 5					
Date Time 6					
Date Time 7					

2. What will happen to your resting pulse rate and your recovery rate if you follow a regular exercise program? How will this be beneficial to your health?

_____

_____

Activity 3.2 UP – How to increase fitness (continued)

Fitness tests

The aim of fitness tests is to find out if the heart is pumping sufficient blood to the muscles. To do this the pulse rate is measured. Pulse is the beat of the heart as it pumps blood into the arteries. Your pulse rate is the number of pulses in one minute (which is also your heart rate or HR). As with any other muscle, your heart has to be exercised to make it stronger. The result is that a fit person can recover from exercise quicker than an unfit person, for example:

Fit person
running HR = 140
minutes later HR = 90

Unfit person
walking HR = 140
minutes later = 120

These examples show that a fit person's heart rate gets back to the heart's resting rate much quicker. Exercise (together with diet) makes the heart stronger so people are less likely to have heart attacks or heart disease as they become older.

	Unfit adult	Fit adult
Resting heart rate	85 bpm*	70 bpm
5 minutes skipping	160 bpm	120 bpm
5 minutes walking	140 bpm	120 bpm
5 minutes running	140 bpm	120 bpm

*beats per minute

These figures show that a fit person's heart does not beat as fast as an unfit person's heart.

1. Why do we give fitness tests?

2. What is a pulse?

3. What do we need to do to make our hearts stronger?

4. A fit person will recover more quickly after exercise.
   True or false? Explain.

3.3 The air around us

TravelSmart Objectives

To introduce the fact that air is made up of a mixture of gases and that excessive car use can add other gases which pollute the air.

To conduct scientific investigations that explore air pollution and its effect on the environment.

TravelSmart Outcomes

Students will be able to:

- understand the names and proportions of gases in the air
- conduct scientific investigations to learn that the car is a source of air pollutants
- describe some effects that pollutants have on our health and environment
- draw conclusions regarding the amount of particles in the air in relation to weather, wind direction and location.

JUNIOR PRIMARY – 3.3 Learning Activities

Class discussion

Students discuss how they can determine air quality, just by breathing.

Focus questions:

- Does air have a smell?
- If you think it does, what does it smell like and where does the smell come from?
- Can you think of any places that you do not like to go to, because of the smell?
- Smells usually go away. How does this happen?
- Brainstorm two lists of things at your home that smell – nice smells and nasty smells.
- Why do we need air?
- Will we ever use up all the air? If not, why not?

Research

If it can be done safely, organise a class excursion to a local garage, crash or exhaust repair shop. Ask the manager to conduct a tour of the garage, showing students all the aspects of car maintenance and why it is important. Discuss what it smells like inside and outside the building. Interview the manager about the business, including the aspect of air pollution from cars.

Alternately, the manager could be invited to school to discuss these aspects of the business.

Focus questions:

- What sorts of things in a garage cause smells and air pollution?
- Do the mechanics ever complain about the smells?
- What things are done to reduce the pollution and improve the air quality in the garage?
- What sorts of fuel are available for use in motor cars?
- Which sort is the best for our environment? Why?
- Are there any other aspects of motor car maintenance that are better for the environment than they used to be? For example, the gas that is used in the air conditioner has been replaced by a more environmentally friendly product.

From the information, students could plan a way of reporting their findings and presenting them to the school.

MIDDLE PRIMARY – 3.3 Learning Activities

An excellent teaching resource, *Who cares about our air? – A workbook on Air Pollution for Primary Schools* has been produced by the Department of Environmental Protection (WA) for AirWatch.

Scientific investigations – Air – Is it there?

Access a copy of the AirWatch workbook and conduct investigations outlined in Section 1 – Let's check out the air, Section 2 – What's in the air? and Section 3 – Polluting the air. These activities encourage the understanding that air is there, it is a vital resource and we must care for it. Two of the Air Watch investigations are included in this section.

Activity 3.3 MP – The air around us*

Working in groups, students organise to collect the following materials which represent gases in the environment. Put them all in the jar and mix well.

- large jar
- 78 dried peas
- 21 chocolate buds
- 1 piece of popcorn
- 1 raisin
- 1 Fruit Loop
- 1–3 pieces of walnut.

The mixture represents the following gases:

Mixture contents	Environmental gases
dried peas	nitrogen gas
chocolate buds	oxygen gas
pop corn	carbon dioxide
raisin	water vapour
Fruit Loop	trace gases

Focus questions:

- Which is the most abundant gas?
- Which of these gases is important to our survival, and why?
- Does this gas make up most of the air?
- Is the amount of oxygen in the air always the same? What keeps it that way?
- The motor car affects the quality of our air. What sorts of changes do we need to make to reduce pollutant gases?

Build on earlier research to answer these questions.

TravelSmart Log

Provide opportunities for students to complete reflective writing about the understandings they have developed in regard to air and air quality. (See Section 2 – 2.1 A changing world – Middle Primary).

** From Who cares about our air? A workbook on air pollution for Primary Schools. 2002. Department of Environmental Protection (WA). Perth. p. 13, 24–25.*

Activity 3.3 MP – How clean is our air?*

This investigation measures pollutant concentration in the local area through collection of air particles.

Procedure:

- Cut strips of cardboard 5 cm wide and 25 cm long.
- Punch a small hole in one end for hanging.
- Use a compass to draw 5 circles, each 2 cm in diameter, along each strip.
- Cut out the circles and cover each hole with clear sticky tape, ensuring the entire hole is covered on one side, leaving the sticky side exposed.
- Hang the particle collectors in interesting places – in windows, on verandahs, in a bathroom, a laundry, and a cupboard.
- Students design a way to record various readings – recording wind strength, wind direction, cloud cover, temperature and a description of what is stuck to the particle collector. They may need to use a magnifying glass to see the particles clearly.
- Students take readings and make regular recordings over a two week period.

Class discussion

Focus questions:

- Did the particle collectors collect anything?
- Were the pollutants worse on any particular days?
- Can students give reasons for this? For example, which days and why?

This investigation could be carried out during different seasons of the year, in different locations and with the particle collectors facing different directions.

** From Who cares about our air? A workbook on air pollution for Primary Schools. 2002. Department of Environmental Protection (WA). Perth. pp. 58–59.*

UPPER PRIMARY – 3.3 Learning Activities

Research – What is air?

Students commence their research by brainstorming all the things that they know about air and categorising them.

www

AirWatch activity
http://www.epa.nsw.gov.au/air/airwatch/actgu_airpollutants.pdf

Qualities of air – experiment
http://www.sciencentre.qld.gov.au/sciencentre/exhibits/permanent/gases/gases1.htm

Good definitions and diagrams of air pollution and how it happens
http://earthsci.org/weather/airpolute/airplou.html

Investigation – Who cares about our air?*

This Activity must be done outdoors and under very close teacher supervision. It could be linked to OHS & W regulations in the school. The purpose is for students to examine exhaust pollution by using a white sock to collect pollutants from car exhaust.

Process:

- Put a white sock over the tail pipe of a car (the car should not have been running recently as there is a danger of burning). Use insulation tape to seal the sock over the tail pipe.

Students must stand at least 5 metres from the car while an adult starts the engine and allows it to run for 5 minutes, then turns the engine off.

- After allowing sufficient cooling time – at least 5 minutes – remove the sock from the tail pipe.
- Examine the sock with a magnifying glass.

Class discussion

Discuss with students what they see on the sock, for example:

- the density of particles
- the colour, size, smell and feel of the residue / particles
- Where would the pollutants usually go if there is no sock to collect them?
- Would the pollutants be harmful to our health? Why?

Activity 3.3 UP – Who cares about our air?*

Students could either complete the Activity, or record this investigation as a scientific procedure, describing the resources needed, the three steps of the process and listing some conclusions about car pollution and our health.

This activity could be extended by setting up investigations to compare the particle emissions of different makes of cars, noting their age and how long since their last service or tune-up. It is important to discuss with students that a significant proportion of car pollution is in the form of gases, which filters do not collect. Visible pollution is not a good indicator of whether vehicles are emitting pollutants such as Nox.

** From Who cares about our air? A workbook on air pollution for Primary Schools. 2002. Department of Environmental Protection (WA). Perth. pp. 58–59.*

Students could record and rank the results, from the types of cars that show the biggest sample of particle pollutants, to the least. Do any patterns emerge from their investigations?

Environment Reporting

You can access information about the air quality of your local environment by visiting the Australian Government's National Pollutant Inventory. Search the national database to determine emission levels for your local area.

www www.npi.ea.gov.au

How does your local area rate in air quality?

Can you identify local factors that are environmentally friendly and environmentally unfriendly?

Research

As an online research exercise, ask students to brainstorm the keywords they could use to find information about air pollution, public health, the national costs of being unhealthy. Show students how to access the main daily newspaper in their state and how to use the contents listings to locate news items on these topics.

If the school subscribes to an online news database, this activity could produce some interesting information from Australia and other countries for comparison.

Activity 3.3 MP – The air around us*

The motor car affects the quality of our air. But what do we know about it? This activity will give you an idea of what is in our air.

1. Combine the following ingredients in a glass jar.

Stir to mix well.

2. Answer these questions:

   a. This is called a mixture. How would you describe a mixture?

   _____

   _____

   _____

   b. How is this mixture different to the ingredients in a cake?

   _____

   _____

   _____

** From Who cares about our air? A workbook on air pollution for Primary Schools. 2002. Department of Environmental Protection (WA). Perth. p. 13.*

Activity 3.3 MP – The air around us* (continued)

The mixture in your jar represents the gases which make up our air. Use the key below to examine your jar of 'air'.

Mixed contents		Environmental gases
dried peas	=	nitrogen gas
chocolate buds	=	oxygen gas
pop corn	=	carbon dioxide
raisin	=	water vapour
Fruit Loop	=	trace gases

c. Looking at the mixture, which are the most abundant gases in the air?

_____

_____

d. Which of these gases is important to our survival and why?

_____

_____

e. Which gas makes up most of the air?

_____

_____

f. What do you think would happen if the amounts of these gases changed.

_____

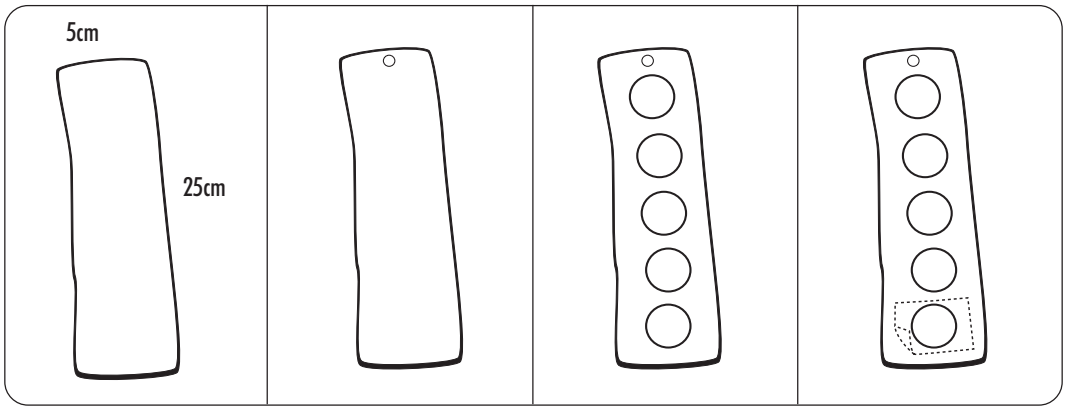
_____

_____

** From Who cares about our air? A workbook on air pollution for Primary Schools. 2002. Department of Environmental Protection (WA). Perth. p. 13.*

Activity 3.3 MP – How clean is our air?*

Follow the pictures below to create your particle collector.



1. Cut out cardboard
2. Punch a small hole in the top
3. Cut out five circles
4. Place sticky tape on one side of each hole

1. Hang your particle collector in an interesting place.

Observations

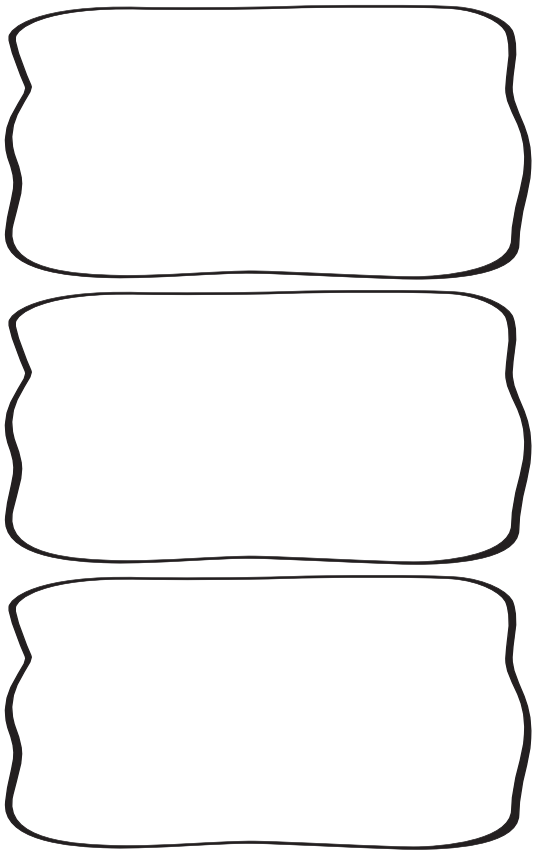
Check your particle collector every couple of days and record the following:

Date	Weather	Wind STRONG/MILD	I can see...

** From Who cares about our air? A workbook on air pollution for Primary Schools. 2002. Department of Environmental Protection (WA). Perth. p. 24–25.*

Activity 3.3 UP – Who cares about our air?*

1. In the space below draw the three main steps of today's experiment and write a sentence to explain each of the steps.



2. What did you observe when looking through the magnifying glass at the sock?

3. Can you explain why this could be harmful for our health?

** From Who cares about our air? A workbook on air pollution for Primary Schools. 2002. Department of Environmental Protection (WA). Perth. p. 24–25.*

3.4 Traffic congestion

TravelSmart Objectives

To measure the amount of traffic around school 'drop off' zones during peak times and highlight the problems that congestion creates.

To give students the opportunity to observe traffic, to record vehicles that show signs of air pollution and to record single or multiple occupancy of vehicles.

To explore ideas for decreasing the number of students arriving and departing by motor car.

TravelSmart Outcomes

Students will be able to:

- summarise data collected, based on tallying of information
- identify reasons for reducing school traffic congestion
- predict the consequences of acting in a certain way
- understand the terminology 'single' and 'multiple' occupant in reference to recording travel habits
- understand that some vehicles contribute more gas emissions to the environment than others
- appreciate that multiple occupancy car trips are a positive travel choice
- discuss solutions to school traffic problems based on active transport options such as walking, cycling, public transport and car pooling.

JUNIOR PRIMARY – 3.4 Learning Activities

Class survey

How many people travel in your car when you come to school?

Where do you get out of the car?

Do you have to cross any roads to get into the school?

Observation

Students observe the school 'drop off' zone and discuss what they see. They could take photos of the zone, for use in follow up classroom activities.

Organise displays that highlight the issues of the school 'drop off' zone – with space for people to write comments. Ask if the work could be displayed in public areas at school and in the community, local library or council chambers.

Collect the displays, collate the comments that have been made and prepare a report for presentation to the school's administrative team and to the governing council.

ICT idea – *Students observe the zone and take photos with a digital camera, select the best photos, import them to a word processing document and use them to build a class display for comments.*

MIDDLE PRIMARY – 3.4 Learning Activities

Class discussion

Students take photos of the 'drop off' zone during peak times, for example, the half hour before school starts and the half hour after school finishes.

Focus questions:

- What do you notice about the 'drop off' zone in the morning and afternoon?
- Is it safe to walk or cycle in this area? Why or why not?
- How many people travel in one car?
- Are students sharing cars?
- How could we solve the school traffic congestion problem? For example, encourage students and parents to walk or cycle to school, catch public transport where available, car share with other students or neighbours.

Brainstorm

How could the school's traffic congestion problem be solved?

Students brainstorm ideas for positive change. Develop a plan that includes details of:

- how it will be put into action
- what information will be given to the school community
- who will participate
- how the plan will affect the traffic problem.

Section 5 – Resources – 5.1 Thinking and teaching strategies

Getting the message across

Suggestions for recording the plan include:

- design a poster explaining the key ideas of your plan
- write a letter to parents/caregivers explaining how the school can reduce traffic
- Write a short talk that could be given to the class or at assembly
- Write a song about how the school could reduce traffic
- Write a list of instructions for implementing your plan.

UPPER PRIMARY – 3.4 Learning Activities

Survey

In pairs, students design a tally system for recording the number of cars entering the 'drop off' zone and the number of passengers they count in a 15 minute period. Students can also take photos of the area, to use as discussion starters or as part of their final presentations.

Class discussion

Focus questions:

- In comparing the findings of student surveys, are they similar or different? What could have caused this?
- How many cars did they count and how did this compare with the number of passengers? Ask students to calculate an average for passenger occupancy per vehicle.
- How would the amount of traffic be affecting the health and safety of students?
- How would you solve the school traffic problem?
- What could you personally do?
- How could the school begin to solve the problem? Who might you ask to help? Why?

Brainstorm

Brainstorm general ideas for reducing the amount of traffic. Remind students of active transport options such as walking, cycling and using public transport. Individually or in groups and using class discussions, students then develop a plan for reducing school traffic congestion.

Who will be the audience for the presentation of the plan? Consider the needs of the audience when deciding how to present – use posters, pamphlets, information sheets, photos, computer presentations, displays, plays and songs, etc. – to make sure that you get your message across to the widest range of people.

Section 5 Resource – 5.1 Thinking and teaching strategies

Activity 3.4 UP – Traffic count survey*

Students design a tally sheet for recording their observations about traffic, in particular smoky vehicles. The observation point needs to be on a flat, straight, moderately busy road where vehicles do not have to accelerate.

A smoky vehicle is one that gives off visible smoke for 10 seconds or more when not climbing steep hills or accelerating heavily.

When designing the tally sheet, students will need to allow for the following information to be recorded:

- Date
- Time
- Place

** From Who cares about our air? A workbook on air pollution for Primary Schools. 2002. Department of Environmental Protection (WA). Perth. pp. 66–67.*

- Vehicle type
- Smoky vehicle (yes/no)
- Type of emission – colour, density
- Number of occupants

In the Activity students are asked to interpret their findings and to comment on the potential impact these findings could have on the environment.

Class discussion

Focus questions:

- Did you establish a pattern in relation to make, age and smoke emissions of vehicles? If so, what was the pattern?
- What was the single to multiple occupant car ratio?
- Which do you think is a better way to travel, and why?
- Discuss car pooling or car sharing as a travel option that reduces the number of trips and the number of cars on the road. Add definitions for these terms to your TravelSmart Log.

Car pools

Organise a car pooling day or week where parents and caregivers and students are encouraged to car pool with friends. Record the car pool groups and the number of trips that have been saved by using this positive travel option.

- What were the main destinations for people using the car pool?
- What could be done to make this a sustainable change?
- Could a neighbourhood share cars for other reasons? What could/would these reasons be?
- How could it be organised?
- Discuss the most important things that would make the plan work.

Research

Community car cooperatives have been started in some communities.

Focus questions:

- What is a car cooperative?
- How does it work?
- Who can use it?
- How much does it cost?

www

Co-operative Auto Network
http://www.gvrd.bc.ca/sustainability/casestudies/coopautonet.htm

The Twin Cities Green Guide
http://www.thegreenguide.org/transportation/carsharing/php

The People's Car Co-op
http://www.peoplescar.org/pages/history.htm

AutoShare
http://www.autoshare.com/

** From Who cares about our air? A workbook on air pollution for Primary Schools. 2002. Department of Environmental Protection (WA). Perth. pp. 66–67.*

Activity 3.4 UP – Traffic count survey*

1. Design a survey to record observations of the smoky vehicle problem. By looking at your survey results in a small area you can estimate the problem in a larger area.

   The survey process: Choose a busy road that is flat and where vehicles do not have to accelerate. You will need to design a survey to record the following:

   - date, time and location
   - car type, approximate age
   - smoky vehicle (Yes or No)
   - number of occupants.

Hint – A smoky vehicle is one which gives off visible smoke for at least 10 seconds when not climbing a steep hill or accelerating heavily.

Single occupant = 1 person travelling in the car (the driver).

Multiple occupant = More than one person.

2. Interpretation of survey results.
   1. How many smoky vehicles were recorded?
   2. How many single occupant cars were recorded?
   3. Calculate the ratio of single to multiple occupant cars.
   4. Did the statistics of smoky vehicles show a pattern? For example, were they all old cars or a particular make?
   5. How could this information be useful in combatting pollution?
   6. Use your data to construct a graph. Write a paragraph explaining the information you have collected and what it tells us.
   7. What could be done to lower the numbers of smoky vehicles on the roads?

** From Who cares about our air? A workbook on air pollution for Primary Schools. 2002. Department of Environmental Protection (WA). Perth. pp. 66–67.*

3.5 Greenhouse

TravelSmart Objectives

To learn about the effect that air pollution has on our environment.

To understand that our lifestyle contributes to the pollutants that cause the enhanced 'greenhouse' effect.

TravelSmart Outcomes

Students will be able to:

- find current information about the enhanced 'greenhouse' effect and what has caused it
- understand that the enhanced greenhouse effect is a world problem and that any small changes made by many individuals can make a difference.

Learning activities for Middle and Upper Primary only

MIDDLE PRIMARY – 3.5 Learning activities

TravelSmart Log

Students use a dictionary and other resources to define the following terms: greenhouse gas, emission, pollution, environment, sustainable, smog, active transport, carbon monoxide, haze, global warming, etc. They can use the TravelSmart Glossary for more information. (See Section 2 – 2.1 A changing world – Middle Primary).

Add the definitions to the Glossary in their TravelSmart log.

Create a display of TravelSmart words as a mobile, screensaver, poster or banner.

Section 5 – Resources – 5.4 Glossary

ICT idea – *Create a poster of words, scan it and import it to your desktop as a screensaver display.*

Activity 3.5 MP – Small changes made by many

Students brainstorm suggestions for reducing pollution and individually develop plans for personal change which could help the environment.

Discuss with students why they have made these choices. Rank the suggestions from easiest to hardest to implement and discuss reasons behind the rankings.

Can students suggest any improvements for the local area, and ways to make the changes easier?

How could they involve their families and members of their local neighbourhoods?

Letter

Using the list of local issues from the brainstorming session and class discussion, write a letter to the local council explaining the changes required to reduce greenhouse gas emissions. Items could include an upgrade of walking and riding trails, planting of extra trees and shrubs or more programs to encourage the recycling of materials, creation of bicycle libraries (see Glossary) or car co-operatives.

Section 5 – Resources – 5.3 Text types

UPPER PRIMARY – 3.5 Learning activities

Research – What is 'greenhouse'?

Plan a concept map with students which explores the What, How, When, Where, Why and Who of greenhouse gas emissions and the resultant greenhouse effect.

www

Fact sheets about the greenhouse effect and greenhouse gases
http://www.greenhouse.gov.au/education/factsheets/what.html

Greenhouse gases produced by our transport choices
http://www.greenhouse.gov.au/pubs/gwci/transport.html

Fuel Consumption Guide for calculating how environmentally friendly your car is
http://www.greenhouse.gov.au/fuelguide/index.html

CSIRO website has information about greenhouse
http://www.dar.csiro.au/information/greenhouse.html

Origin Energy site with more information on greenhouse
http://www.originenergy.com.au/environment/subnav_section.php?pageid=271

Section 5 – Resources – Thinking and teaching strategies

Greenhouse Calculator

This software allows businesses and schools to calculate the greenhouse gases, the energy costs and air pollution effects that their energy choices have on the environment. It can be viewed on the Victorian Government's Environmental Protection Agency website and is available for purchasing from CSIRO Publishing.

www

Environmental Protection Agency
http://www.epa.vic.gov.au/GreenhouseCalculator

Kyoto Protocol

Governments of countries around the world are very aware of the impact that our energy choices are having on the environment. An international agreement, the Kyoto Protocol, was drawn up and has been signed by representatives of many nations.

Find out about the Kyoto Protocol – why it is so named, what it involves, what are the implications for us and for our country. Is Australia a signatory to the Kyoto Protocol? Why? What strategies does our government have in place to reduce Australia's greenhouse gas emissions? What countries have signed? Locate and name the countries on a map of the world.

www

Australian Greenhouse Office
http://www.greenhouse.gov.au/international/kyoto/index.html

Debate

State governments in Australia are very concerned with environmental issues. One initiative, which has been applied in South Australia, is to directly link the cost of an Environmental Protection Authority (EPA) licence to the amount of pollution an industry produces.

Students could research and debate the topic

'That industries should pay for the environmental effect of the pollution they produce.'

Activity 3.5 MP – Small changes made by many

The message of 'small individual changes made by many' is probably the best way that you can make your personal contribution to improving the quality of the air you breathe.

1. Refer to the table below.

   Consider each of the possible actions and decide your view on each, based on whether it is an action that you:

   - already do
   - could take
   - could not take
   - can see your family or friends taking.

* Actions to reduce air pollution	Actions I take now	Actions I could take	Actions I could not take	Actions my family could take
1. Plant trees and shrubs to reduce carbon dioxide levels				
2. Educate others about problems related to air pollution				
3. Save energy around the home for example, turn off lights when not needed, use electrical appliances as little as possible				
4. Walk or cycle rather than use a car				
5. Use public transport whenever possible				
6. Keep car engine or motor cycle tuned				
7. Use unleaded petrol if possible				
8. Recycle materials				
9. Plan your travel in advance				
10. Observe bans on/avoid backyard burning				
11. Write letters to people in your local neighbourhood advising them of ways to improve the local environment				

2. Discuss your responses with other students in a small group. Give reasons for the choices you've made.

   What changes would need to happen to help you to follow up some of these actions?

** Table adapted from Keep Australia Beautiful Council (NSW) Environment Resource Kit (1991)*

3.6 Environmental sustainability

TravelSmart Objectives

That we need to live in and contribute to a sustainable society – and that we have the capacity to make choices that can make a difference.

TravelSmart Outcomes

Students will be able to:

- understand that the health of our planet is everyone's responsibility and that each of us can make a difference
- understand that environmental sustainability is possible, by using information and education to make healthy environmental choices.

Learning activities for Upper Primary only

UPPER PRIMARY – 3.6 Learning activities

What is environmental sustainability?

Current scientific findings suggest that our daily choices and lifestyles are unsustainable. That is, there simply are not enough resources (environment, social, cultural, etc) for them to continue undiminished over time if we keep using them at the current rate, through our current practices.

Environmental sustainability is about making smart choices that minimise the environmental and social impacts of our lifestyles and ... (encourages) ... creativity and ingenuity to address current problems and avert future crises.*

What do you think?

Develop a concept map that explores the environmental and social aspects of our lifestyles, listing the choices we make at home, school and in leisure – and considering the changes we could make.

Sustainable Living Project

The Sustainable Living Project offers definitions and a competition for schools to participate in.

www http://www.sustainableliving.com.au/what_is_SLP/global.htm

Ecological Footprint

Another way of looking at environmental sustainability is to calculate your ecological footprint – the impact that your living has on the ecology of our world. Access an ecological footprint calculator and organise for students to complete it, to give them a better idea of the issue of ecological sustainability and how they are part of it.

Discuss the outcomes of individuals and compare and contrast results in a graph or table. Display it in the classroom.

www http://www.earthday.net/footprint/index.asp

* *http://www.sustainableliving.com.au*