



# DIY Bike Education - The absolute basics

## Summary

In this module students learn safe bike handling practices and how to stay safe while riding their bike. They will understand the basics of checking their equipment prior to cycling to ensure it is safe for use and practise basic riding skills.

Opportunities are provided to enable students to develop and practise skills, knowledge, safe habits, responsible behaviours and decision-making skills in a range of situations that are relevant to their ages and abilities. See also Links to Western Australian Curriculum on page 11.

**Year level: Years 4 – 6**  
Teaching and learning resource.

Minimum time required – 2 hours.

## Bike skills

The development of peripheral awareness is conducive to targeting lessons to the middle to late childhood phase of development however skills such as the following may be appropriate for Year 2 upwards:

- Ways to maintain a balanced position.
- Development of basic cycling skills ensuring the use of large spaces such as school basketball courts or oval.
- Increased spacing between students when doing simulations.
- Children can learn to ride from a young age and will copy the behaviours of their parents/carers/teachers when it comes to being safe as a cyclist.

Teachers need to be mindful and to make judgements regarding their students and should take into account the student's:

- Age.
- Cycling experience.



- Ability to perceive hazards.
- Perception of visual and auditory information.
- The fact that younger students need more space to perform skills.
- The distances involved.

## Module aims

Provide perceptual motor and cognitive tasks in a practical setting to:

- Improve balance.
- Build confidence.
- Practise decision-making skills related to safe cycling.
- Improve bike handling skills.

## Considerations - Cycling and the Law

The WA Police recommend that children under nine years of age do not ride on a road unless closely supervised by a responsible adult.

### Cycling on Footpaths

On April 27th 2016, WA's laws changed to allow cyclists of all ages to use footpaths, unless otherwise signed. The amendment to the Road Traffic Code 2000 brought WA's bicycle laws into line with the rest of Australia, making it legal for parents to ride alongside their children on footpaths, improving safety. Under the previous rules, only children under the age of 12 were able to ride on footpaths without breaking the law.

### Helmets

It is compulsory for all cyclists to wear an approved helmet while in motion, unless exempted.

## Teaching ideas

Teachers are encouraged to use a range of the teaching and learning ideas provided below. The teaching and learning ideas provide opportunities to address multiple learning areas. Teachers can modify and extend ideas for different year levels and phases of schooling.

### Learning outcomes

Students will be able to:

- Fit their helmets correctly and recognise potential risks some clothing may pose.
- Conduct a basic bicycle safety check assessing the roadworthiness of the bicycle.
- Demonstrate how to mount and dismount a bike safely.
- Describe how forces can be exerted by one object on another through direct contact or from a distance in relation to braking and movement.

- Demonstrate their science understanding in relation to force, motion and braking.
- Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends.
- Compare results with predictions, suggesting possible reasons for findings.
- Understand the concepts of front and back brakes and demonstrate effective use.
- Demonstrate how to apply the back brake (either whilst stationary or moving).
- Demonstrate how to change gears.
- Apply their brakes on command in a variety of simulated emergency and non-emergency situations.
- Scan for hazards and safety considerations whilst riding.
- Ride in a straight line.
- Explain what safe habits are and why they are essential in everyday life.
- Describe the benefits of cycling.
- Create a visual representation to display a safety aspect related to cycling.

## Preparation

### Resources needed

- Students to bring bicycles and helmets from home.
- Use the Parental Consent form to encourage parents to pre-check students' bicycles.
- Access to large open space such as a basketball court, grassed park or cordoned-off car park.
- 12 cones.
- 4 squeaky toys.
- Wet rags or baby wipes (to wipe hands should they get in contact with oil or grease).
- 2 floor pumps with gauges.
- A whistle.

## Background

Bicycles are a low cost, carbon friendly mode of transport. Riding a bicycle has no negative impact on air-quality or noise and increases bicycle riders' metabolic and cognitive functions, which means less traffic and congestion, plus a healthier population<sup>1</sup>.

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<sup>1</sup> The Heart Foundation: <https://www.heartfoundation.org.au/images/uploads/publications/Active-Vision-for-Active-Transport-Report.pdf>

## Activity 1 - What are safe habits?

When considering safety and bicycles we follow the preventative principle, which means we implement habits like checking shoelaces are done-up, or indicating before turning. This way behaviour becomes habitual and doesn't require deliberate decision making, reducing response times to risks and increasing safety.

### Ask the students

**Q - What are safe habits?** Get students to brainstorm habitual behaviour and explore what safety habits they already follow in everyday life.

Explain to students that when riding a bicycle, it is important to always wear a helmet, indicate, and check for others on a shared path before turning or ringing a bell.

## Activity 2 - Fitting a helmet correctly

Bicycle riders travelling on WA roads and paths must wear an approved helmet with the straps fastened at all times. All lawful bicycle helmets have a safety sticker quoting the Australian standard.

The helmet must comply with AS/NZS 2063:2008 - Bicycle helmets. Scooter or skateboard helmets don't comply with this standard and aren't suitable for bicycle riding. See Department of Transport website - [Bicycle rules, standards and safety](#)



Parents fitting their child's helmets

While a suitable helmet is essential, it is as equally important to wear it properly. A correctly fitted helmet sits snug around the person's head and can't fall off or otherwise move into the person's neck or face. There are five steps to remember to fit a helmet properly.

### Tips for fitting a helmet

1. Don't wear any caps under the helmet. This prevents the helmet from fitting properly.
2. Use two fingers to space out the helmet fit above your eyebrows. That's how far down the helmet should sit.
3. Check that the straps on either side of the helmet form a triangle under your ears. Use the straps' clasp to adjust them.

4. Adjust tightness or circumference around the head. Most helmets have a little dial or spacer at the back of the helmet to tighten it.
5. Finally, when the strap around the chin is closed, it should be tight enough so the strap doesn't move easily over students' chins.

## Pairs or small groups tasks

- **Check helmets** - Ask your students to check each other's helmets for the Australian Standards sticker on the inside of the helmets. Then encourage them to check each other's helmet fit.
- **Helmet relays** - Put helmets on the ground 20 metres from start line. On command students run to their helmet and put their helmet on and then run to the end marker.
- **Piggy in the middle** – (Helmets in the middle) Divide students into 4 teams. Only one person from each team can run into the middle at a time and take their helmet. Helmet must be fastened and adjusted before they can run back to their team hoop and tag next team member who then runs into the middle.

## Activity 3 - Assessing clothing and risks

### Ask the students

#### Q - What clothing can pose a safety issues when you ride a bicycle?

- Encourage students to brainstorm issues.
- Explain to students that wearing some items of clothing when cycling poses a safety risk.
- Shoelaces that are either too long or come undone can get caught and cause the cyclist to lose balance or fall.
- Flaring pants can get caught in the chain. Long skirts or sashes can get caught in the back wheel. These can lead to coming off the bicycle, but are easily preventable.
- Bags hanging off the handlebars are an extreme safety risk. Why?

## Activity 4 - Conduct an ABC bicycle check

The most basic bicycle check ABC stands for Air, Brakes and Chain. Everyone should assess the bike that they are about to ride prior to riding it to ensure that it is safe to ride.

### Air

If you can pinch the tyre easily then the air pressure isn't sufficient. The recommended tyre pressure is imprinted on the rim of the tyre as a range. A basic rule of thumb is if you can press the tyre more than one third of compression then it needs to be pumped up.

Get students to find the information, then attach a bicycle pump and pump up the tyre to the midpoint of the range. As tyres always lose air the pressure must be checked regularly.

## Brakes

Most bicycles have a front and a rear brake. To check whether they are working properly, start with the front brake. Squeeze the right level on the handlebar and try to move the bike forward. The front wheel should be blocked. If it is, the rear of the bicycle should lift. Now check that the brake also releases by lifting the front wheel off the ground and spin the tyre. If it moves freely the brakes have released properly.

Check the back brake works by squeezing the left brake lever on the handle bar. If it works you should have to drag the left wheel against resistance. Now release the lever, lift the back wheel off the ground and spin the tyre. If it moves freely the brakes have released properly.



Bike mechanic checking a student's bike

## Chain

The chain should be clean and well lubricated so it flows smoothly. Lift the rear wheel and circle the pedals forward and listen to metal squeaking sounds. If the chain is squeaky it will require oiling.

## Pairs or small groups tasks

**Ask the students to conduct an ABC check each other's bicycles**

- What is the tyre pressure?
- Design an ABC check list that incorporates air, brake, chain and safety aspects.
- Complete the safety check on each bicycle.

## Cross-curricular extension opportunity

### Science Investigation

- What is the relationship between pressure in the tyre, motion and force.
- Create a graph using the safety check results.
- Write a summary of the findings.

## Activity 5 - Walking, mounting and dismounting from a bike safely

Regardless of the shape of students' bicycles it is recommended to mount and dismount by lifting the leg over the back of the bike rather than moving the leg through the frame.

Safety tip: It is best not to mount the bike by putting the leg forward, over or through the frame as the foot can easily get caught and the rider can lose balance and tip.

## Group Game “Simon Says”

Encourage skill retention by playing Simon Says incorporating all of the techniques explored so far:

- Safe braking (no skids);
- Safe mounting and dismounting;
- Safe walking.

## Activity 6 - Techniques to begin movement on a bicycle

A solid push-off enables the rider to glide smoothly in a straight line, which is essential on shared paths where space may be limited and others may be around. If the right pedal were a pointer on a clock face, the best place to position it would be 2 o'clock. This is where the pedal will produce the most output and momentum when pushed down and is called the 'power-push-off'.

### Group challenge

Encourage students to test the best pedal push-off position by designing a push-off race.

Line students up on one side of the area, choosing their own preferred push-off position they get to start their bikes on the signal, glide as far as their push-off can move them, and then stop. Who has travelled furthest? Get the student to explain what they did and get others student to use same technique.

Create a graph or visual display of results: such as a column graph of pedal position on x axis and distance travelled on y axis.

## Activity 7 - Use techniques to balance a bicycle and ride in a straight line

Explore how to balance on a bicycle.

### Stationary balance

Count how many seconds the students can balance on a bike before they need to pedal or put a foot down.

### Moving balance

Students count how many times they had to put their foot down and push off the ground as they move along a 50-metre grid. Those with the best balance and push techniques will have the lowest number of push-offs. No pedalling in this activity.

### Musical statues

Students ride in a straight line and when the music stops must perform an emergency brake.

## Traffic light game

Students ride their bicycle and react to the command of the teacher – green is go, amber is slow and red is stop - Reaction game.

## Ask your students

### Q - Why do you think it is hard to ride in a straight line?

Get students to explore the challenge of movement and balance.

If your bike riding area has marked lines on the ground, these are great to utilise.

## Skill progression:

- Simulate train track markings for students to cycle in between.
- Decrease the width of the train track markings to increase skill challenge.
- Riding on a line.

If there aren't any marked lines use squeaky toys, which students can ride over and make the toy squeak twice (with the front and back tyre), which will indicate that they were riding in a straight line.

Get the students to observe when it is easiest to ride and balance – with sufficient momentum and gliding (the bicycle moves without pedalling).

## Activity 8 - How do we stop a bike safely?

The front brake is used with the right lever on the handlebar, the back brake with the left. To stop the bicycle safely both brakes will have to be used. This is essential - if riders use the left brake only they will skid, if they use the right only they may somersault over the handlebar.

Both brakes respond to pressure differently. The left requires more squeezing before the bicycle slows down. The right is very sensitive and the bike slows down quickly when squeezed. That's why 70% of the pressure should be applied on to the left, 30% on the right.

## Ask your students

Q - How do we stop a bicycle safely? and get them to explore the technique.

## Group Game “The Slow Bike Race”

Encourage students to ride slowly and challenge their balance with a slow race. Begin by lining students up on one side of the riding area.

The rules are as follows:

- On the signal, everybody has to push off and place their feet on their pedals.
- Feet have to remain on pedals at all times.
- Students have to travel in a straight line (no zigzags).
- The last student to arrive on the opposite side has the best balance.

Get students to explore different techniques of riding slowly: riding with brakes on, pedalling backwards and maybe even riding standing up.

## Extension - Activity 9 - History of the bicycle

Create a timeline (using ICT or The Arts) of the history of the bicycle and key events or milestones. Make a model of a three-dimensional object (eg bicycle or helmet) and describe key features.

## Extension - Activity 10 - Planning a practical riding skills course

Work collaboratively to safely plan and publish a sequence of steps for planning a practical riding skills course.

## Learning area concepts and skills

### Health and Physical Education

- Fundamental movement skills.
- Strategies for safety.
- Minimising risk.
- Practising movement skills.
- Movement sequences.
- Movement concepts.
- Strategies for health, safety and wellbeing.
- Ways to maintain a balanced position when connecting movements.
- Ways to maintain a balanced position while performing various skills.
- Movement skills that combine the elements of effort, space, time, objects and people.

### Science

- Apply concepts push and pull effects, reaction times and braking to riding a bicycle safely.
- Distances, motion, inertia in relation to speed and braking.
- Distances, forces involved in bicycle crashes, bicycle safety design bicycles and helmets, helmet standards, evaluating safety equipment such as helmets.

### Mathematics

- Data representation.
- Prediction.
- Simple analysis and interpretation.
- Measurement of braking.

- Comparison data.
- Distances under different conditions.
- Understanding.
- Fluency.
- Reasoning.
- Problem solving.

## English

- Writing.
- Creating text.
- Recount.
- Oral presentation.
- Writing and presenting a summary of findings.

## The Arts

- Drawing and constructing models of bicycles.
- Timelines - 3D and visual art forms.

## Technologies

- Creating solutions.

# Links to the Western Australian Curriculum

**Table 1: Health and Physical Education**

Strand	Sub-strand
Personal, social and community health	<ul style="list-style-type: none"> <li>• Contributing to healthy and active communities</li> </ul>
Movement and physical activity	<ul style="list-style-type: none"> <li>• Moving our body</li> <li>• Understanding movement</li> <li>• Learning through movement</li> </ul>

**Table 2: English**

Strand	Sub-strand
Literacy	<ul style="list-style-type: none"> <li>• Interacting with others</li> </ul>

Strand	Sub-strand
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- Creating texts

**Table 3: Science**

Strand	Sub-strand
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Science understanding

- Physical science

Science as Human Endeavour

- Nature and development of science

Science inquiry skills

- Questioning and predicting
- Planning and conducting
- Processing and analysing data and information
- Communicating

**Table 4: Mathematics**

Strand	Sub-strand
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Statistics and probability

- Data representation and interpretation

Measurement and Geometry

- Units of measurement

**Table 5: The Arts: Visual arts**

Strand	Sub-strand
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Making

- Developing skills and processes
- Production

**Table 6: Technologies: Digital Technologies**

Strand	Sub-strand
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Processes and production skills

- Collecting, managing and analysing data

Creating solutions

- Investigating and defining

## General capabilities

- Literacy, critical and creative thinking, personal and social capability
- Numeracy, information and communication technology (ICT)

## Cross-curriculum priorities:

- Sustainability



Students taking part in bike education.