



# DIY Bike Education - Intermediate Bike Riding skills and knowledge

## Summary

In this module students build on their basic bicycle knowledge and expand and refine their riding skills. Opportunities are provided for students to practise and rehearse skills and routines whilst riding in static and dynamic simulated road and hazard conditions.

Students learn to consider others around them when riding whilst using applicable non-verbal and verbal communication skills to create and maintain a safe environment. See also *Links to Western Australian Curriculum* on page 10.

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

Minimum time required – 2 hours.

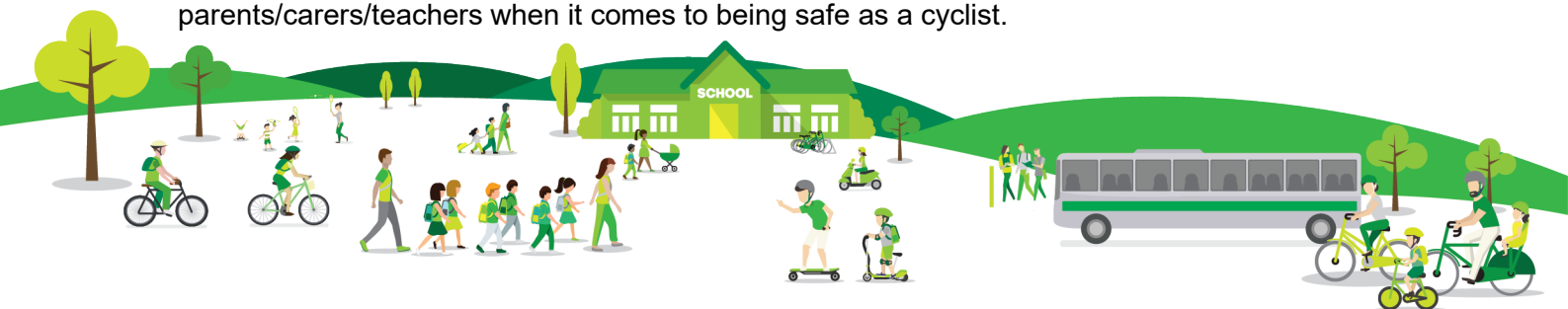
## Bike skills

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.



Students completing a bike education session



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.

## 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 and learning resource

### Learning outcomes

Students will be able to:

- Demonstrate how to mount and dismount a bike safely.
- Understand the essential scanning techniques and look behind when turning or overtaking.
- Scan for hazards and safety considerations whilst riding.
- Ride in a straight line.
- Use safe practices to perform an emergency and non-emergency braking simulation.
- Use safe cornering techniques to ride around corners or bends.
- Create a visual presentation to highlight the techniques involved in:
  - Sweeping turns.
  - T turns.
  - Round a bout turns.
  - Tight turns.
- Identify the apex of a corner.

- Use safe practices like indicating and ringing their bell.
- Provide peer feedback on a range of skills using technology to collect, manage and analyse the data.
- Use an enquiry based learning approach to solve challenges.

## 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.
- A whistle.

### Teaching ideas

Teachers are encouraged to use a range of the teaching and learning ideas provided. 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.

## Activity 1 - Riding through bends or around corners

The skill used to ride through bends or around corners is called cornering. It is challenging on a bicycle because the centrifugal force will push the rider to the outside of the bend requiring the rider to adjust their centre of gravity while retaining their balance.

### Guided discovery

#### Using a critical enquiry approach - enquiry based learning

The following challenges and activities provide students with the opportunities to analyse, problem solve and make effective decisions in a range of contexts. The student-centred teaching challenges promote the development of both skills and understanding which challenges participants to reflect.

### Ask the students

#### **Q - Why is it difficult to ride through bends or around corners?**

Get them to brainstorm the challenges they may already have experienced.

#### In pairs students investigate best technique to corner

- What do you have to do with your body in order to successfully corner on a bicycle?.
- What is the optimal line to take a corner?
- Students incorporate mathematical and science concepts in their analysis and findings.

- Create a visual presentation of how to corner.
- In small groups students take turns to coach each other on how to corner and provide constructive feedback to enable refinement of skills.
- Each group designs a small course that is comprised of a series of turns and corners of increasing complexity and difficulty.
- Students practise riding through each small course.
- Students self-reflect on areas of skill to practise.



A student completing a bike education course on his bike

## Activity 2 - A simulated riding zone

Using cones set up a simulated zone for the following:

- Sweeping turns.
- T-turns.
- Round a bout turns.
- Tight turns.
- Gradually increase the complexity of the turns and introduce hazard perception elements.

### Mathematical understandings

- Identify angles as measures of turn and compare angle sizes for a series of corners.
- Compare the angles and classify them as equal to/greater than/or less than, a right angle.
- Estimate, measure and compare angles using degrees. Construct angles using a protractor. This activity can be done using digital technology to predict and compare the angles of the simulated corners.
- Investigate, with and without digital technologies, angles of a series of simulated corners and turns. i.e. on a straight line, angles at a point and vertically opposite angles. Use results to find unknown angles.

## Activity 3 - Cornering made easy

### Explanation

Using cones mark out a corner and chalk the apex to show where it is and the sweep of the corner. Students take turns at cycling through the corner cutting the apex.

Students will learn that cornering is made easier by adjusting your speed, gear selection, braking and taking the right line.

The faster you ride, the harder it is – and the more at risk you are of coming off your bicycle.

## Good cornering technique includes:

- Adjusting the speed of the bicycle.
- Gliding through the bend.
- Keeping the pedal that's on the inside of the bend up on a 12 o'clock position, which prevents the pedal from scraping the ground.
- Cutting the apex.
- Looking to where you want to go.

## Activity 4 - Scanning, anticipation and perception

### Pair activity: Sun and Earth

Pair the students up and explain the game Sun and Earth

- One student is the sun, who will travel in a straight line from one end of the riding area to the other.
- The other student is the earth who will navigate around the sun in circles.
- It is both riders' responsibility to stay safe.
- The goal is to ride without collisions by continuously communicating with each other, braking and using correct cornering techniques.
- Pairs should count the number of circumnavigations. This can be turned into a class challenge to see who can achieve the highest number.

### Making predictions and describing patterns and relationships

Encourage students to think about how to make this challenge easier. For example, the slower the sun travels, the easier it is for the earth to circle around it. The earth also increases their chance of more turns if they ride in an ellipsis rather than a circle requiring a sharper turn, which is more challenging.

If the sun and earth both travel at the same speed how many circumnavigations can be made? Explain your predictions.

## Activity 5 - Scanning and looking behind

Observing the environment around you, or scanning, looking ahead and behind you is vital for riders to pre-empt issues. However, it is challenging for riders as it requires them to continue to balance although they are looking in the opposite direction.

### Ask the students

#### Q - Should I ever try and turn my head to see what's behind me, why?

Encourage students to consider suitable situations when this is a good idea and why it may be challenging to do so.

## Group activity: How many fingers?

- Practise scanning by getting students to ride in a circle. Incorporate other challenges like riding in a straight line (or over a squeaky toy) and cornering.
- Position yourself in the riding area and ask students when they have passed you to look back. Hold up different numbers of fingers up and get students to call out what they see. Vary the number of fingers you hold up.
- Start by positioning yourself so that students require little turning of their head and increase the challenge by moving closer behind them so that students need to turn their head further and further.
- Progress to moving whilst holding up your fingers.
- This challenge is made easier by encouraging students to glide passed you instead of pedalling while turning their head. The slower the speed, the less challenging it will be too.



A student completing a bike education course

## Activity 6 - Riding with one hand: indicating and ringing your bell

Riding with one hand is challenging because the rider needs to be able to remain balanced with one hand. It is easiest when the rider doesn't need to pedal as the body remains still. This requires students to assess that they have sufficient momentum to be able to glide.

Students who are unable to ride with one hand are encouraged to practice the following.

- Ride in a circle, on straight stretches briefly and gently release the grip on the handlebar, move the fingertips on top of the grip and gently tap fingers and then regain the grip again.
- The next phase for the student is to place their hand on their thigh, which requires them to retain their centre of gravity.
- The final phase is to stretch out the hand to the left or right. Again, the gentler and smoother the movement, the easier it is to balance.

### Ask your students

#### Q - Why do we need to be able to ride with one hand?

Enable them to brainstorm appropriate behaviour that requires one-handed riding. It is a legal requirement for people on bicycles to indicate before they turn left and right and ring their bell before overtaking others.

## Pair or group activity: Timing

If students are competently indicating, practise this game either in pairs or as two teams.

Students cycle past a student who is standing holding a drink bottle and take the drink bottle. Insert the drink bottle into the bottle cage on their bike or repass to the next stationary student.

Skills involved in this activity include - balance, scanning, timing, perception and fine motor skill execution.

## Group activity: “Simon says”

Recap previously learned skills by repeating them via a Simon Says game. Incorporate all skills and knowledge covered so far:

- Ring your bell.
- Ride slowly.
- Indicate right.
- Indicate left.
- Safe braking (no skids).
- Safe mounting and dismounting.
- 2 o'clock push offs.
- Safe walking.

## Extension - Activity 7 - The puzzle

Design a course that incorporates a series of skill points and corner challenges. Students create a map and use a grid reference system to describe the various locations on the course.

## Extension - Activity 8 - My journey to school

Each student requires a large blank canvas to create a map of their journey to school. Instruct them to put home in one corner and school in the other. Students' map creations can be print based or computer generated. See the resource [‘Mapping My Journey to School’](#) for more details.

### Sketch the route from home to school.

Use the following pointers to help the students.

- Just do a basic outline to start with - only the roads, paths, intersections.
- Make it a map in your own individual style. It's your journey and won't be the same as anyone else, even if they cover the same ground.
- Don't worry about scale or accuracy. Those things can be influenced by perspective.



A student describing her journey to school

- e.g. something that seems more important may be drawn larger. things that don't matter can disappear.
- Re-live the journey when drawing your map.
- Create a learning journey.

## Extension - Activity 9 - Construct a simulated path of journey

Using the basketball court or oval as a pseudo suburb construct a simulated path from your home to school.

- Choose the best path to take to ride from home to school.
- Use a grid-reference system to describe locations.
- Describe routes using landmarks and directional language.

## Extension - Activity 10 - ICT feedback

### Small group activity

Students use Information and communication technology (ICT) to give feedback to a partner or group. Feedback can be via watching and analysing a video or annotating images taken at the preparation, execution and follow-through phase of the skill.

Use technology to provide feedback to each member of your group regarding:

- Cornering.
- Gearing.
- Emergency braking.
- Non-emergency braking.
- Scanning.
- Bike handling.

### Collecting, managing and analysing data

Collect and present different types of [data](#) for a specific purpose using [software](#).

## Learning area concepts and skills

### Health and Physical Education

- Fundamental movement skills.
- Practising movement skills.
- Movement sequences.
- Movement concepts.

- Guided discovery.
- Coaching.
- Strategies for safety.
- Minimising risk.
- 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, 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.

## HASS

- Geography.
- People are connected to many places:
- People are connected to many places (e.g. street, suburb or town), regional (e.g. state) and national (e.g. country).

## Technologies

- Collecting, managing and analysing data.
- Creating solutions.
- Investigating and defining.

## 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> <li>• Creating texts</li> </ul>

**Table 3: Science**

Strand	Sub-strand
Science understanding	<ul style="list-style-type: none"> <li>• Physical science</li> </ul>
Science as Human Endeavour	<ul style="list-style-type: none"> <li>• Nature and development of science</li> </ul>
Science inquiry skills	<ul style="list-style-type: none"> <li>• Questioning and predicting</li> <li>• Planning and conducting</li> <li>• Processing and analysing data and information</li> <li>• Communicating</li> </ul>

**Table 4: Mathematics**

Strand	Sub-strand
Statistics and probability	<ul style="list-style-type: none"> <li>Data representation and interpretation</li> </ul>
Measurement and Geometry	<ul style="list-style-type: none"> <li>Units of measurement</li> </ul>

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

Strand	Sub-strand
Making	<ul style="list-style-type: none"> <li>Developing skills and processes</li> <li>Production</li> </ul>

**Table 6: Technologies: Digital Technologies**

Strand	Sub-strand
Processes and production skills	<ul style="list-style-type: none"> <li>Collecting, managing and analysing data</li> </ul>
Creating solutions	<ul style="list-style-type: none"> <li>Investigating and defining</li> </ul>

### General capabilities

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

### Cross-curriculum priorities:

- Sustainability