NRMA ROAD TRAVEL REWARDS

NRMA Free Movers Road Safety Program
Unit 3: E-Micromobility
Teaching Notes

PROGRAM DESIGN

Part of the NRMA Free Movers Program, Unit 3 focuses on educating students about the safe and legal use of e-bikes and e-scooters. The module uses active learning strategies such as interactive videos with pop-up questions, real-life scenarios, group discussions, and practical planning tasks to build awareness of laws, risks, and responsible riding behaviours. Students learn key safety considerations including speed management, helmet use, and battery charging practices, while exploring the impact of modifications and fire risks. Aligned with PDHPE Stage 4 outcomes, the unit promotes decision-making for wellbeing, personal responsibility, and strategies to manage unexpected changes. Activities encourage critical thinking and communication, helping students understand how to enjoy e-micromobility while prioritising safety in community contexts.

CURRICULUM ALIGNMENT

The module explicitly links to PDHPE Stage 4 outcomes:

- PD4-6: Investigates strategies to manage personal safety in a range of environments through scenario-based discussions on e-bike and e-scooter use.
- PD4-7: Promotes safe decision-making and community wellbeing by encouraging students to identify risks related to speed, helmet use, and legal requirements, and choose safer alternatives.
- PD4-9: Applies decision-making to enhance personal and community health through implementing safety strategies to reduce crash risk and impact.
- PD4-10: Explains how personal identity is influenced by independence and responsibility, reinforced through reflection activities on safety choices and responsible riding behaviours.

SUGGESTED LESSON PLAN

Task	Activity	Duration
Introduce lesson – NRMA road safety education: Free Movers (3 units) 3. E-bikes and scooters	Has anyone had the opportunity to ride an e-bike or scooter? Are they aware of legal rules and safety considerations for this transport?	5 mins
Watch the video and answer the three pop up questions	Students can watch independently or as a class led by the teacher	15 minutes
Student scenario + 4 questions	Discuss with a partner, in a small group or as a class	10 minutes
"On paper"	3 tasks – travel plan template completed	20 minutes
Extension activities	Details below	10 mins if needed
Lesson conclusion	Summarise the learning using question 3 of slide 14	5 minutes

Accessing the content

NRMA Online Programs are accessed through Edpuzzle: an educational tool that allows you to learn and engage with interactive video lessons Students will access each of the following units via the Edpuzzle link and Class Code emailed to the teacher.

Videos are also available on Vimeo.

Link: https://vimeo.com/1157386260

Password: Move2026

SUPPORTING QUESTIONS

Students watch the video either individually or as a class group. The following multiple-choice questions appear throughout the video to check engagement and understanding - If students have logged into EdPuzzle individually their responses and progress will be shared with you at the start of the following week.

e-law What's one key legal difference between e-scooters and e-bikes in NSW?	a. E-scooters can be ridden on all footpaths b. E-bikes must be registered **c. E-scooters are generally restricted to private property** d. E-bikes must be under 100 watts of power
Tuning If you modify your e-bike to go faster, what might it be reclassified as?	a. A bicycle b. A skateboard c. A scooter **d. A motorbike**
Top Speed What's the legal speed cut-off for motor assistance on an e-bike in NSW?	a. 15 km/h **b. 25 km/h** c. 40 km/h d. No limit
Charging Why should you avoid charging your e-bike on soft surfaces like beds or carpets?	a. It's more convenient elsewhere b. Chargers don't work properly on soft surfaces **c. It increases the risk of fire** d. It uses too much electricity
Things to look for What is the purpose of the Regulatory Compliance Mark on chargers?	a. It shows they're eco-friendly b. It proves they work faster c. It means they're imported from Europe **d. It shows they meet Australian safety standards**

Understanding Physics Why are E-Bike riders more likely to cause or experience greater damage in a crash compared to traditional bicycle riders?	**a. E-Bikes are heavier and travel at higher speeds, increasing impact force during collisions** **b. E-Bike riders are less experienced and often ignore traffic rules** **c. E-Bikes are designed with fewer safety features than regular bicycles** **d. E-Bike crashes usually occur in remote areas with limited medical access**
Responsible Decisions Why is it important to manage your speed while riding an E-Bike? (tick all that apply)	**a. At higher speeds, you have less time to react, increasing the risk of a crash** **b. Greater speed results in higher impact force, which can cause more severe injuries to you and others** c. Riding fast improves battery efficiency and extends range **d. Lower speeds make it easier to navigate obstacles and avoid hazards**

GROWING INDEPENDENCE – STUDENT DISCUSSION

These discussions build awareness of responsibility and safe decision-making:

Why do you think modifying an e-bike to go faster is not just risky but also unfair to other road users?	Students demonstrate understanding of how modifications increase crash risk and create inequity in shared spaces.
What steps would you take before riding an e-bike on your own for the first time?	Students apply planning and safety strategies for independent travel.
If you modify your bike what do you think the legal implications could be for you - what might happen if you were to then injure someone?	Students recognise legal consequences and personal responsibility linked to unsafe modifications.
Describe a situation where slowing down could prevent a serious injury while riding. What would you do differently?	Students identify risk scenarios and apply speed management strategies.
Imagine you're talking to a friend who never wears a helmet. What would you say to help change their mind?	Students practice persuasive communication to promote safety behaviours.
How would you feel if you were to injure someone, either your passenger or a pedestrian, whilst riding your e-bike?	Students reflect on empathy and accountability in road safety.

EXTENSION ACTIVITIES

ON THE MOVE – Transport for NSW

E-bike safety

This activity will help students understand the rules and laws surrounding e-bikes, exploring the differences between power-assisted pedal cycles, electrically power-assisted cycles, and the prohibition of petrol-powered bicycles.

Rules Update

Legislation is catching up with E-bikes and Scooters in NSW - Students to undertake research to uncover the most up to date information.

https://bicyclensw.org.au/e-bike-safety-tips/
https://www.transport.nsw.gov.au/roadsafety/bicycle-riders/road-rules-for-bicycle-riders

VIDEO TRANSCRIPT

Slide	Script
Content	Hello, I'm Deb and I work at the NRMA, an organisation that helps keep our roads safe. In this unit, we'll explore how new technology is changing the way we move around, the laws that guide us, and the research being done to make e-transport safer for everyone. Micro-mobility refers to a growing group of small vehicles designed for short trips. E-bikes and scooters are being used more and more for short trips instead of cars, helping to save money and reduce carbon emissions. Thanks to recent advances, they've become easier to access and more affordable, so they're now used by individuals and in rental schemes all over the world. For young people, they offer a new kind of independence. With an e-bike or scooter, it's possible to get to school, sport or friends' houses without needing a lift from a parent.
E-mobility and the law	Let's look at the rules for riding e-micromobility devices, like e-scooters and e-bikes in New South Wales and the ACT, whether you already ride or you're just thinking about it, knowing the laws helps keep you safe and on the right side of them. First up: **e-scooters.** If you own an e-scooter or e-skateboard in NSW, CURRENTLY you can only use it on private property. Riding them on public roads or footpaths isn't allowed, except in some trial areas. They are permitted in the ACT and the legislation is likely to be rolled out in NSW soon. We believe that they will be speed limited to 20km/h and restricted to shared paths and on road bike lanes. E-bikes are a little different. They also help with short journeys but follow different rules. In NSW you're CURRENTLY allowed to ride e-bikes on public roads, shared paths, cycleways, and separated paths, and until you are 16 years old, footpaths. E- bikes must be pedal assist – Throttle only E-bikes are illegal. I use the word currently because the laws are evolving in this space and it would be wise to keep up with any developments and changes

Cyclist Road Rules	In NSW and the ACT, e-bikes are treated just like regular bikes. That means the usual cycling rules apply: keeping to the left on paths, watching out for pedestrians, and using a bell to let others know you're nearby. There are also some important do's and don'ts. For example, you can't ride across pedestrian crossings unless there's a green bike light or a bike lane. And while younger riders can use footpaths, that's only allowed for kids under 16-or for adults riding with a child. Safety gear matters too. Of course, always wear a helmet but also have lights and reflectors so others can see you, especially in low light. Of course it goes without saying, never ride under the influence of alcohol or drugs and don't use your phone whilst riding. As for who can ride: There's currently no set minimum age for personal e-bikes, and you don't need a licence or registration. But if you're using a hired one, you'll need to be at least 14 and have permission from your parent or carer.
E Scooters	A quick word on e-scooters. They might seem like a fun and eco-friendly way to get around, but in NSW, it's currently illegal to ride your own e-scooter in public places. That means no roads, footpaths, or parks, and if you do, you could face a big fine. They are permitted in the ACT limited to 25km/h on shared paths, bike paths and 15km/h on footpaths or in high pedestrian areas. There are some trial areas where shared e-scooters are allowed in NSW, The government is using these trials and data from the ACT to learn how e-scooters might be used safely in the future. Even in these trial zones, you must be at least 16 years old to ride. Many people have been hurt crashing e-scooters because their small wheels and high speeds make them quite risky, so, if you do ride, now or in the future, limit your speed, always wear a helmet and watch out for bumpy ground!
Infinite Power	When it comes to e-bikes, it's important to know that the motor is there to lend a hand not take over completely. Riders still need to do the pedaling; the motor just helps out when it gets tough, like heading uphill or riding into strong winds. Some bikes have motors that go up to 500 watts, while others are capped at 200. But no matter the wattage, one rule stays the same: the motor must stop helping once the bike hits 25 kilometres per hour. That doesn't mean you're stuck at that speed, if you pedal harder or coast downhill, you can still go faster. The key is that the motor only assists below that limit. And when you're just getting started, the motor can give a little push to get you moving, up to around 6 kilometres per hour. After that, it's all you, because remember, throttle only bikes are illegal.
Maintenance and Modifications	Some riders try to change how their bike works by modifying it to go faster or be more powerfully than it's supposed to. This is often called "tuning," It might sound harmless, but these changes can damage key parts like the motor and brakes and that makes the bike unsafe to ride. Even more seriously, tuning can change what kind of vehicle you're riding. Once it goes past certain limits, it might not be an e-bike anymore it could be treated as a motorbike under the law. That means different rules apply, including needing registration, insurance, and a licence. Without those, you could be looking at big fines and even legal trouble

	So, while it's fine to personalise your e-bike with things like lights or colour, **tampering with the speed limiter is definitely not okay**. Sticking to safety standards helps protect you and everyone else on the road.
Fire Risk	There are specific safety standards for e-micromobility devices which aim to counter a serious growing safety concern: fire. Most e-micromobility devices are powered by lithium-ion batteries. When designed and built the right way, they're safe. But if the batteries don't meet Australian Standards, the risk goes way up. Fire, explosion and the release of harmful gas during a malfunction is a real danger. In fact, over the past couple of years, incidents involving battery fires have increased sharply. E-micromobility devices like scooters and bikes are now involved in over a third of those cases, resulting in injury and death.

Battery Safety	Charging your e-bike or scooter might seem simple, but it's one of the biggest risks when it comes to fire safety. It starts with choosing the right equipment. That means buying your device from a trusted supplier and having any repairs or battery replacements done by qualified professionals. Using uncertified parts or dodgy chargers can damage the battery—and if it is damaged or overheats, there's a real danger of fire. Always check that your charger is properly rated and carries the Regulatory Compliance Mark. It's a sign it meets Australian safety standards. When it comes to charging, timing and location matter. Don't leave batteries charging overnight or unattended, and once it's full, unplug it. And never charge or store these devices on soft surfaces like beds, carpets or couches, or near anything flammable. If you can, keep your e-bike or scooter in a garage or shed, well away from the main parts of your home and exits. Installing a smoke or heat alarm in that space is also a smart move. These small changes make a big difference. They help protect your home, your safety, and the people around you.
Responsible Riders	Coming off an e-bike really hurts. In Australia, and overseas emerging data is painting a picture of how many crashes, injuries or even deaths are linked to e-bikes. Recent data indicates a continued upward trend in NSW, e-bike crashes with police recording an 82% increase in collisions between 2023 and 2024. In the Netherlands, a country known for its love of cycling and even with its well-designed bike lanes researchers there have noticed something worrying. For nearly 20 years, cyclist fatalities stayed steady. Then, starting in 2018, things changed. The number of deaths hit a record high in 2022, matching the jump in e-bike use.
Why?	Speed is one of the big reasons e-bike crashes can be more serious than regular bike crashes. E-bikes reach higher speeds with far less effort, on average, around 13.3 km/h, compared to just over 10 km/h for standard cyclists. That might not sound like much,

	but when you combine extra speed with heavier bikes and sometimes less experienced riders, the risk of injury goes way up. Now here's where things get intense; the maths behind a crash. A rider weighing 50 kilograms on a standard bike might hit with around 17,700 Newtons of force if they crash. But on an e-bike? That force jumps to over 25,800 Newtons. Add a second person, like a passenger or even a heavy backpack and that impact force can spike to more than 44,000 Newtons. That's like taking the full weight of a couple of small cars slamming into you for a split second. To make it relatable: imagine faceplanting from your kitchen bench straight onto the floor. Ouch. And remember, in NSW, e-bikes are legally allowed to go up to 25 km/h. A crash at that speed? It's the force of being hit by a sprinting horse or falling headfirst off a tall fridge. So yes, e-bikes are fun and practical, but that extra speed and weight mean taking safety seriously is more important than ever.

Risky to Righteous!	You'd be surprised how much difference just 2 km/h can make when it comes to crash risk. Speed and injury don't increase evenly, they're exponential. That means slowing down just a little can massively reduce the impact force if something goes wrong. Even tiny changes matter. Hitting a bump at 11 instead of 13 km/h might spare your spine a painful jolt. And in a fall, slower speeds increase the chance of rolling or recovering instead of slamming into the ground. It's not about crawling along, it's about giving physics fewer ways to ruin your ride. E-bikes also tend to be linked with other risky behaviours, like riding without a helmet, ignoring traffic rules, or having more than one person on board. These things increase danger not only for riders, but for other people on the path or road. That's why safety doesn't stop with the bike itself. Always wear a properly fitted helmet. Take time to learn the rules, If you're going on roads at all, read the driver's handbook, and consider doing the learner driver theory test, or even sign up for a cycling intro course. Parents can be held responsible if you crash into someone, so make sure your e-bike is legal, you follow the rules and it's a smart idea to ask your parents to investigate bicycle insurance to protect you and others around you. Even though there's currently no formal licensing for e-bike riders, learning the ropes still matters. Sharing paths and roads is a responsibility. Start slowly, get to know your bike and the traffic around you.