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UK Government

Supplementary Activity Templates for E-Bikes

June 2026

Active
Travel
England

This document contains e-bike specific adjustments to the existing Activity Templates, and should be used in conjunction with them: https://www.bikeability.org.uk/for-instructors/activity-templates/

Definition:
'Electrically assisted pedal cycle (EAPC)' is the legal term for an e-bike or e-cycle that can be treated the same under UK law as a conventional pedal cycle, provided the cycle meets certain criteria and the user is aged 14 or over.

There are many products known as 'e-bikes' or 'e-cycles' available on the market. However, not all of these are classified as EAPCs.

To be classified as an EAPC under the EAPC regulations, the cycle must:

- be fitted with pedals that can propel it
- have an electric motor with a maximum continuous rated power not exceeding 250 watts
- cut off electrical assistance when it reaches 15.5 miles per hour (mph)

EAPCs that comply with the regulations do not need to be registered, insured or taxed (Vehicle Excise Duty).

If an EAPC does not comply with the regulations, it is treated as a motor vehicle under the Road Traffic Regulation Act 1984 and the Road Traffic Act 1988."

From: https://www.gov.uk/government/publications/electrically-assisted-pedal-cycles-eapcs/electrically-assisted-pedal-cycles-eapcs-in-great-britain-information-sheet

For ease, we have used the term 'e-bike' in the activity templates below.

The Bikeability Trust supports the E-Bike Positive campaign, an industry-led initiative that promotes safe, legal and responsible e-bikes across the UK. Led by the Bicycle Association (BA) and the Association of Cycle Traders (ACT), the campaign helps consumers identify trusted e-bike brands and retailers that meet rigorous standards for product safety, compliance and customer support. By backing E-Bike Positive, we support efforts to build public confidence in e-bikes and champion their benefits as a safe and sustainable mode of transport.

3. Preparing for cycling (including checking you are fit and ready to cycle, checking clothing and fitting a helmet, and checking your cycle and making sure your cycle fits you.)

National Standard reference: 1.1, 1.2.1, 1.2.3

Instructing points

Rider permissions
You must be at least 14 years of age to use an e-bike in the UK. The same applies for training on e-bikes. Proof of age should be provided where necessary.

Laws for e-bikes

- Understand that by law you must be at least 14 years old to ride an e-bike.
- Understand that a 'pedlec' (pedal assist) e-bike should be fitted with a mandatory CE(abbreviation for Conformité Européenne, or European Conformity) or UKCA (UK Conformity Assessed or UKNI for Northern Ireland) mark making it clear that it meets regulatory, health and safety and environmental standards for sale in the European Economic Area and the UK.
- It should have an electric motor with a maximum continuous rated power not exceeding 250 watts.
- It should not be motor-assisted above 15.5mph, and it should only be throttle assisted up to 3.7mph (effective walking speed) to assist when setting off or on hills and not to provide constant drive while riding at normal speeds.

E-bike cycle check

- Understand how your e-bike works including the use of different power modes.
- Check that electrical components are not damaged, are in good working order and meet legal requirements.
- Learn how to charge your e-bike using the correct charger supplied by the manufacturer, and how to safely store charging equipment.

Additional resources

EAPC Standards and Legal Requirements **E-bike Safety**

Activity ideas

Introduction

You must ensure that prior to the start of the training, you carry out a component wear assessment of key parts of the rider's e-bike: Tyres, brake pads, brake rotors or braking surfaces, and rim and spokes due to increased stress from weight and prior usage. You should also check the battery contact points for damage, swelling or excessive wear.

Riders must be advised if the e-bike is not appropriate to use. If this occurs, consider back-up options like a replacement standard cycle being used to enable training to take place.

At the start of the session, ask the rider about their prior cycling experience including using non-powered cycles and establish if they have attended prior Bikeability training. Once you ascertain that the rider's level of experience is appropriate, introduce the legal requirements and restrictions on age and e-bike set-ups. Invite questions, particularly from riders who are not sure.

Emphasise that a legal e-bike will use a motor that is intended to assist pedalling, not replace it. Clarify that motor-assisted top speed is restricted and this ensures the e-bike can be classed as a cycle, not a motorcycle, and as such, can be ridden without the need for a vehicle licence or insurance. Discuss how one of the great benefits of e-bikes is they reduce riders' effort, enabling people to undertake longer rides or hills with ease or carry more weight. This can be of benefit to all riders, including people with mobility issues.

Introduce the functions of the e-bike that must be working correctly so that it can be deemed safe and legal to ride. Make a point that heavier, faster cycles are likely to put more wear on components so, along with regular checks by the rider, these should be checked by a professional mechanic at least once a year. Be clear that riders should only use the correct charger supplied by the manufacturer.

E-bike cycle check

- If using the ABCD check, add 'E' for 'Extras' and 'Electrics'. Identify parts and locations of key e-bike components: Battery, charging port, head unit with buttons, throttle (if present). Riders who don't speak English or are Deaf can mirror you as you teach.
- Low tyre pressures may not be immediately noticed due to the motor assist, so should be checked regularly. Lower pressures will increase the likelihood of punctures, which may be more difficult to fix than on a standard cycle.
- Check the battery is installed correctly and charged. The current charge may be displayed on the head unit or battery itself.
- Check the display and control unit is working, buttons respond to touch, it is possible to change modes, and no faults are displayed.

Activity ideas (continued)

- Check if a throttle is present. If so, brakes should usually be applied when the e-bike is stationary to prevent it being powered forwards if the throttle is activated by mistake.
- You can check the throttle is limited to 3.7mph by test riding the e-bike. It should not go faster than walking speed.
- Hire e-bikes may have had only limited prior checks, but you should familiarise yourself with key functions where necessary:
  - How to lock / unlock app-based locking systems
  - Battery charge
  - Whether the bike is programmed to only be ridden in specific locations, or is set to go slow
  - How the motor engages (torque sensor in pedal or movement sensor in front or rear wheel)
  - Cost of hiring

Sample questions to check understanding

Q. Have you ridden an e-bike before?
Q. How can e-bikes handle differently to standard cycles without motors?
Q. What should you check on your e-bike before riding?
Q. How might you identify an e-bike that is not legal?

Differentiation

Inclusion

Some riders may feel overwhelmed when discussing certain technical or legal details. Keep language simple and focus on the essential points, for example maximum motor and throttle assistance given and battery care.

Extension

Simplify

- Riders may struggle with overly technical language so consider avoiding technical terms or abbreviations like 'pedelec' or 'EAPC' if they confuse riders

Challenge

- Riders check each other's e-bikes or carry out a more detailed component wear assessment.
- If there are different types of e-bike present, riders may learn the key differences between them, for example power settings, the positioning of the motor, presence of a throttle, etc..

Risk benefit assessment

Risk
Rider is not sure about their ability to cycle competently and confidently because they have not ridden for a while and have limited experience.

Mitigation
Assess their ability by asking questions or using the e-bike with the motor disabled or a standard cycle. In some circumstances, riders can be encouraged to participate in other Bikeability courses before attending training with an e-bike.

Benefits
Through practice the rider develops their cycling ability and confidence, enabling them to progress onto e-bike activities where the motor is used.

Risk
- A rider arrives on an e-bike that has swelling in the area of the frame where the lithium-ion battery is housed.

Mitigation
- It is agreed that the e-bike motor should not be used and the battery should not be charged and kept outside until it can be assessed by a qualified mechanic.
  Government advice on e-bike safety is shared with the rider. The cycle should not be used for the session until it has been deemed safe or the battery replaced. An alternative bike used (such as a rental bike) for the session or training re-arranged

Benefits
The rider learns about e-bike safety and understands how to deal with the presented issue.

4. Getting on and off your cycle

National Standard reference: 2.1.1

Instructing points

Getting on and off an e-bike
- Understand that sometimes more space is needed when getting on and off an e-bike compared to a standard cycle and that having more space from other riders or static hazards can help prevent incidents.
- Learn how to handle the additional weight of an e-bike and be able to get on and off competently and confidently.
- Be aware that slopes, camber, slippery surfaces and high winds can make it more difficult to get on and off an e-bike. For this reason, it is important to apply the brakes when getting on or off.

Activity ideas

Weight appreciation
Ask the rider to lean their e-bike towards them until they can feel the weight of the bike starting to affect their ability to hold it comfortably. Discuss how the additional weight can affect stability and may present a challenge to some riders, and it is important not to lean the bike too far. Explain that what is comfortable for one rider may not be for another.

Practise getting on and off the e-bike with the brakes applied at all times. Repeating this a few times can help build good technique.

Discuss where it is important to take extra care, for example where there is camber, slippery surfaces, or when carrying extra weight (for example, when using panniers). Elicit from the rider the importance of having enough space in preparation for starting their journey.

Sample questions to check understanding

Q. What conditions or surfaces might make getting on and off your cycle more difficult or risky?

Differentiation

Inclusion
Shorter or lighter riders, or riders with strength or mobility issues may find certain e-bikes difficult to manoeuvre, particularly on challenging surfaces. A different technique may be required. For heavy step-through e-bikes, where the rider cannot comfortably swing their leg over the back of their cycle, it may be better to step over the frame when getting on or off. They may also require support from another rider to steady the e-bike, or may need the assistance of a kerb to get on or off.

Differentiation (continued)

Extension

Simplify

Demonstrate how to handle a heavy e-bike by holding it and safely showing how far it can be leaned to one side whilst keeping it under control (this will depend on your height and strength).

Challenge

Practise moving the e-bike in tighter spaces and getting on and off the e-bike from both sides.

Risk benefit assessment

Risk

A rider may drop their e-bike through not being able to support its weight, or have the bike fall over, taking them with it.

Mitigation

Ensure the rider has sufficient space when practising, and that all basic control techniques are used such as applying the brakes, standing with enough space from the bike etc.. Advise that if the e-bike is falling, it is usually better to let it go rather than risk it pulling you down with it.

Benefits

The rider is able to comfortably handle their e-bike and understand their limits.

5. Pushing your cycle and balancing

National Standard reference: 2.1.1, 2.1.2

Instructing points

Push a cycle

- Be aware that e-bikes are heavy so care must be taken when pushing them.
- Use a 'walk assist' or a throttle function (where present) to help you push your bike.
- Remember to disengage the assist or throttle when you need to stop.
- Be aware of how powerfully the walk assist or throttle engages.
- Hold onto the handlebars and cover and use the brakes where needed when using the walk assist or throttle.

Activity ideas

Push an e-bike

Provide riders with opportunities to stand and walk around with their e-bike, pushing it in different directions to get used to its weight. Practise pushing both forwards and backwards and highlight how both directions are often needed, such as when parking or docking hire e-bikes. Discuss good habits such as keeping brakes on when the e-bike is stationary to help keep it under control.

Walk assist functions on e-bikes are designed to help riders push a heavy bike in situations like steep inclines that need to be walked. Some e-bike throttles can perform the same function.

When riders are standing with their e-bikes, show them where the walk assist or throttle button is located and demonstrate how it is activated. Highlight how keeping the brakes on when at a standstill is even more important for e-bikes with walk assist or throttle buttons, which can make e-bikes lurch forwards if applied by mistake.

Once riders are comfortable standing with and walking with their e-bike, ask them to walk a short distance with the bike using the walk assist or throttle. Before using the function for the first time, riders should first understand how it operates and how to disengage it; this will minimise the likelihood that they lose control of their e-bike.

Ensure the riders are aware of the additional weight of their e-bikes and that should they lose control of their bike and the bike is likely to fall, it may be safer to let go of the bike completely and let it fall rather than risk injury trying to catch it.

Sample questions to check understanding

Q. What is a good habit for when standing next to or sitting on our e-bikes when stationary?
Q. How can walk assist or a throttle be used to help you move the bike on foot?
Q. In what situations might a walk assist or throttle function help you?
Q. If you lose control of a heavy bike, how can you reduce the risk to yourself?

Differentiation

Inclusion
Walk assist or throttle functions may support lighter or weaker riders to move their e-bike in comfort. However, care must be taken when applying these functions if they can lead the e-bike to lurch forwards. Practise using the functions in an open space to ensure riders get comfortable using them before applying the functions in busier environments.

Riders may struggle with the extra weight of an e-bike so practise standing and walking with the bike first. Applying the brakes when stationary, using the stand (if present), and carefully planning where you will go and how you will park the cycle should all help.

Extension
Simplify
To help manage risk when using a throttle for the first time, consider asking riders to first use the function when they are seated and starting a journey. They can then use the function when walking once they are more familiar with it.

Challenge
Practise using the walk assist or throttle function on progressively steeper gradients.

Risk benefit assessment

Risk
A rider loses control of their bike by pressing the walk assist button by mistake and falls with the bike.

Mitigation
Provide clear instructions on how the walk assist or throttle functions work and highlight the importance of applying brakes when stationary, and keeping the brake levers covered when moving. Practise pushing the bike first without the walk assist or throttle applied to gain experience before using the function for the first time.

Benefits
The rider learns how to push their e-bike comfortably and safely including when using the walk assist function.

6. Starting, stopping and controlling your cycle

National Standard reference: 2.1.1, 2.1.2, 2.2.1, 2.2.2

Instructing points

Starting and stopping
- Learn how different power settings such as 'low', 'medium', 'high' or 'turbo' (if present) may deliver different levels of acceleration when starting or pedalling.
- Become familiar with e-bike systems where motors cut off when brakes are applied.
- Understand how different system weights (e-bike, rider, luggage) may affect how quickly or easy it is to start, accelerate or stop, and how appropriate motor assistance can help manage this.
- Stop with control and handle the additional weight of your e-bike once at a complete stop.
- Use a throttle (if present) to assist with starting more quickly such as on an incline, or when carrying heavy loads.

Pedalling, making the cycle go where you want it to
- Ride at appropriate speeds for the conditions and environment, including when cornering.
- Combine pedalling with braking to help with control at low speeds.
- Learn how to moderate speed and distance from other riders when cycling in a group.

Activity ideas

Use a space that will permit riders to accelerate and maintain their highest assisted speed and potentially ride as a group - a space of a length of 60m x 25m should provide enough space.

Due to e-bikes usually having options to change the level of power assist, practise starting and stopping in a phased manner, with lower speeds and low assist levels first. Establish good habits from the outset such as keeping brakes covered and brakes on immediately after stopping. You can then build up to higher speeds and assist levels ('medium', 'high', 'power' / 'turbo') when the riders are ready. Also provide riders with the experience of cycling with the assistance switched off. If riders are moving as a group, they may require more space apart at the beginning. Once the riders have developed their starting and stopping technique and have experienced all the power settings, ask them what is an appropriate level of assistance for the kind of riding they are doing. Elicit the pros and cons of higher levels of power and acceleration (quicker starts and acceleration but also potentially higher chance of losing control, and greater battery usage). Discuss how higher speeds may make it harder to control their bike, particularly when turning or when slowing down or stopping. Highlight how due to the added weight of e-bikes the consequences of losing control will usually be greater than when using a standard cycle.

Activity ideas (continued)

Square courses with tight corners may be helpful to ensure that riders must slow down to turn with control. By standing on the outside of a corner of the space, you can ask the group to practise accelerating, slowing down and cornering until you are satisfied they can ride in the area at low risk. Alternatively, a cone slalom with small gaps or a 'figure of 8' may help riders to develop their braking and pedalling technique. Encourage riders to find the 'biting point' of the brakes while riding at a moderate speed and then smoothly apply the brakes to slow down to progressively lower speeds.

When ready, get riders to practise maintaining at least one bike length when riding together at speeds from 5-12mph, increasing their spacing up to 2 bike lengths when riding at 12-15+mph. Remind riders to look up rather than at the rear wheel of the rider in front, and to look out for signs that riders in front may be about to slow down, for example if they stop pedalling. Riders can take turns leading at the front where they can switch up the speeds. Assess their ability to moderate their speed and to maintain a suitable gap behind the rider in front – essential skills for sharing space with others when riding an e-bike.

Sample questions to check understanding

Q. In which situations might you use a different power setting?
Q. How can your power settings help you start?
Q. How might higher power settings affect your control?
Q. How much space should you give other people when riding at different speeds?

Differentiation

Inclusion
Heavier riders or riders using an e-bike without a throttle, may require more time to start or accelerate.

Extension
Simplify
Riders who struggle with selecting appropriate power settings may have it set for them at a level which is appropriate for their needs and the conditions.

Challenge
Make the corners of a square course more challenging by placing further cones on the outside of the corners that riders must go through, forcing slower speeds.

Encourage riders to accelerate and decelerate more quickly when riding in a group, adjusting their spacing as they do so.

Risk benefit assessment

Risk
A rider is not sure about their ability to cycle competently and confidently (they haven't ridden for a while and only have limited prior experience).

Mitigation
Assess their ability at the start of the training using an e-bike with the motor disabled or a standard cycle. Riders who cannot ride with confidence can be given more space from other riders in the training area, or be encouraged to participate in other Bikeability courses before attending training with an e-bike.

Benefits
Through practice at the start of the session the rider develops their cycling ability and confidence, enabling them to progress onto group-based e-bike activities where the motor is used.

Risk
A rider is surprised by the strength of power assistance in acceleration, leading them to lose control and fall off.

Mitigation
Riders who are unable to control acceleration should start on low power settings and, if appropriate, receive 1-to-1 tuition with an instructor separate from the main group.

Riders who cannot yet moderate speed appropriately may present a significant risk to themselves and others so should continue to practise in a traffic-free space away from others rather than progress onto Level 2 and 3 Bikeability training.

Benefits
Through enhanced practice, riders are able to improve their control and speed moderation, allowing all riders to participate.

7. Stopping quickly and managing hazards

National Standard reference: 2.1.2, 2.2.2

Instructing points

Quick stop

- Stop quickly when riding your e-bike using different levels of motor assistance and at different speeds.
- Understand that different e-bikes, for example hire e-bikes, have contrasting stopping power.

Manoeuvre around a hazard

Manoeuvre your e-bike around a hazard and learn how its size, weight and motor assistance affects its turning ability.

Activity ideas

Stopping quickly with control

In an appropriately-sized training area, demonstrate a quick stop at different speeds using different power settings (if present). Explain that the techniques for stopping quickly on an e-bike are the same as for a standard cycle, but the added speed and weight may affect balance and stopping distances. Highlight that some e-bikes have more powerful brakes (disc brakes or hydraulic brakes are common) which compensate for the extra weight, meaning very quick stops may be possible with the correct technique. Also remind riders that surface conditions affect grip, control, and stopping distances, so speeds should be adjusted accordingly. Explain that other e-bikes, like certain hire e-bikes, may have weaker brakes so riding speeds should reduce where needed to minimise risk of collisions.

Ask riders to practise stopping quickly at different speeds, building up to a maximum assisted speed of 15.5mph when ready. Due to the ease of reaching maximum assisted speed, it is normally best to ensure all riders complete the activity at the highest assisted speed.

Manoeuvring around a hazard

Ask riders to ride around cones in a slalom or obstacle course. E-bikes can be bigger and heavier than other cycles and require progressive practice to master steering at lower speed or when tighter turns are required. Start with activities that are manageable for riders and progress onto more difficult manoeuvres as they gain competence.

Sample questions to check understanding

Q. How do e-bike brakes usually compare to those on a standard cycle?

Q. Thinking about stability, what do you have to be aware of immediately after stopping quickly?

Differentiation

Inclusion

Some e-bikes have one set power output, while others have adjustable power settings. Where possible, support riders to use an e-bike that best meets their needs.

Extension

Simplify

Less confident and experienced riders will need to start stopping quickly activities at a lower speed, progressing to higher speeds only when ready.

Challenge

Where e-bikes have very effective brakes, coach riders how to push their body weight over the rear wheel to enable them to stop even more quickly.

Differentiation

Risk

A rider collides with an obstacle after attempting to stop quickly, and due to the weight of their e-bike, they lose balance and fall over to the side.

Mitigation

Ensure that the training space is suitable for the activity, and that riders' proximity to obstacles is managed. Also ensure that the activity is progressed at a suitable rate, with riders initially practising stopping on flat and open parts of the training area. Coach them to keep their bike straight and to look forwards (not down at the floor) when stopping and to keep the brakes on after stopping. Also ensure saddle heights are appropriate. Where it is not possible for riders to stay seated when stopping, teach them how to stop by coming forwards off the saddle at the moment that they stop, with their feet only reaching the ground when their bike has come to a complete standstill.

Benefits

The riders are able to develop their technique in a safe, progressive and rider-led manner so they can improve their overall skills.

8. Using gears

National Standard reference: 2.2.2

Instructing points

- Combine gear choice with different e-bike power settings to ride comfortably and accelerate smoothly.
- Learn how particularly for e-bikes without walk assist or a throttle, starting in a low gear helps with starting, and choosing a suitable gear is still required to ensure comfort when pedalling.
- Understand that higher power settings affect battery levels, particularly when starting, which uses more peak power than consistent riding. Recognise that on longer rides it may be necessary to reduce motor assistance to save battery, maximise range and ensure you can reach your destination without running out of power.
- Understand that appropriate gear choices and e-bike power settings can reduce wear and tear on the drivetrain, reducing maintenance costs.
- Understand that some e-bikes (such as those used by hire scheme) may not have additional gears and rely solely on motor power to overcome resistance during acceleration, with power instead moderated by pedalling speed.

Activity ideas

Discuss with riders how their gear choices and e-bike power settings usually work together and they can adjust either to their liking. Give them opportunities to ride around and experiment using different gears and power settings to learn how these affect comfort and acceleration. You can ask the riders to start riding at a low speed and to use a low-to-moderate power setting (if present). Then ask them to experiment moving up the different power settings to see how these affect pedalling and acceleration. Ask the riders to then ride slowly on a higher gear whilst trying out the different power modes. Depending on the e-bike motor system, riders may experience very quick acceleration in the highest modes when combined with efficient gear shifting. For e-bikes with throttles, discuss how throttles may compensate for higher gear choices so changing down to a lower gear before slowing down or stopping may not be required.

Discuss how choice of power modes affects battery levels, particularly when starting, which uses more peak power, and how on longer rides it might be necessary to balance battery use to maximise range. Explain how high power and high gear use can wear out a drivetrain (chain, gear teeth, gear hubs) faster.

Where space, riders' ability, and e-bike models allow it, consider a 'race' in a straight line between different riders where they start from the same point, ride in the same power mode, but start off with different gear choices. The riders can accelerate to the maximum motor-assisted speed (for example, 15.5mph) and then stop quickly.

Actvity Ideas (continued)

The winner is the first rider who reaches the maximum speed and performs a quick stop, at which point they call out "STOP" to get the other riders to also stop and end the race. The riders can then assess which gear choice enabled them to reach the maximum motor speed first.

'Slow races' or activities which require careful manoeuvring at low speeds may also be helpful to teach riders effective gear and power mode choices.

Sample questions to check understanding

Q. What is the trade-off in using higher power modes instead of changing gears?
Q. How can you best combine using your gears and your e-bike motor settings when riding on the road?

Differentiation

Inclusion
Some riders' e-bikes may have different motor assistance systems to others. Where it is possible and permissions are granted, consider riders switching e-bike models to learn how different cycles work.

Some riders may struggle to change power modes 'on the move' due to limited one-handed control. Address this through them changing the power mode settings when they are at a standstill.

Extension
Simplify
Some riders struggle to understand how gears and more technical aspects work through lengthy explanations. Instead, support them to learn through experience; experimenting changing gears without worrying about the numbers, but rather how the gears and power settings feel on their legs.

Challenge
Combine coaching on effective gear use and power modes with other activities such as riding with one-hand to help riders learn how to multi-task when cycling.

Risk benefit assessment

Risk
A rider chooses the wrong moment to look down at their e-bike head unit when cycling along and collides with the rider in front of them.

Mitigation
Riders are coached to carefully time their observations of their head unit, for example, by checking the information when they are at a standstill or when they are sure there are no hazards in front of them.

Benefits
Riders become more proficient at changing their gears and using the different power modes, enabling them to ride comfortably and efficiently.

9. Looking behind, riding with one hand and signalling

National Standard reference: 2.2.2

Instructing points

Manage speed while looking behind

- Use motor assistance to help with looking behind.
- Be aware that e-bike motors may cause sudden acceleration, which can lead to control issues when looking behind.

Manage speed for riding one-handed and signalling

- Use motor assistance and power settings to make riding with one hand easier.
- Take a hand off to adjust power settings on the e-bike display and control unit.
- Be aware that e-bike motors may cause sudden acceleration, which can lead to control issues when riding one-handed or signalling.
- Manage acceleration and speed when riding with one hand through braking to ensure speed is controllable.

Activity ideas

Look behind
For activities where riders look behind, deliver this activity as would be done when using standard cycles, but ensure riders are aware of the potential for sudden changes of speed and consider wider rider spacing.

Riding with one hand
For one-handed riding or signalling activities, consider using additional space (where needed) to enable riders to practise at different motor-assisted speeds. Ensure riders are aware that their e-bike motors may provide sudden bursts of acceleration so consider starting this activity on 'low' power settings. Discuss how different e-bike models accelerate differently. For example, e-bikes where the motor drives the front wheel, may be more difficult to ride one-handed compared to a rear wheel-powered e-bike. So progress the activity at a suitable pace for riders, for example, starting with a simple raising of a hand using a 'low' power setting, and then progressing all the way up to signalling with a 'high' or 'turbo' power setting when ready.

When ready, the riders should experience how the 'biting point' of their brakes affects one-handed riding. They can practise riding with one-hand whilst using the brake to lower speed gently to a consistent and low speed of around 3mph, controlling the e-bike's speed by gentle braking and pedalling simultaneously. Discuss the usefulness of this technique for when riding in slow-moving traffic and needing to communicate with other road users behind you, or when sharing space with pedestrians.

Sample questions to check understanding

Q. In which situations might you want to ride very slowly with one hand?

Q. How might your e-bike power settings affect your ability to look behind or ride with one hand?

Differentiation

Inclusion

Taking a hand off when an e-bike accelerates can be a difficult skill to master. Support riders to develop their technique by first using low power settings (or switching off the motor assistance), before progressing onto using higher power modes when ready.

Extension

Simplify

Build riders' skills and confidence riding with one hand before attempting it at the same time as braking. When progressing the activity, first attempt it by using the rear brake when taking a hand off (riding with one-hand whilst applying the front brake requires more careful and less sudden braking).

Challenge

Combine and progress looking behind and one-handed riding activities by asking riders to look behind and signal whilst maintaining a low speed through braking, even progressing onto adjusting their position at the same time as they signal and look behind.

Risk benefit assessment

Risk

A rider applies their front brake too strongly when taking their hand off, leading to a loss of control.

Mitigation

Build up skills gradually and only progress onto applying the front brake for this activity when ready.

Benefits

Through progressing activities at a suitable pace, the rider is able to develop their technique smoothly and without incident.

10. Sharing space off road with pedestrians and other riders

National Standard reference: 2.2.2

Instructing points

- Understand your responsibilities as an e-bike rider when sharing space with others and where you sit on The Highway Code's 'hierarchy of road users'. Recognise that you have additional responsibility not just for pedestrians, but also for other cyclists due to the greater weight and potential speed of your cycle.
- Understand how and when you should moderate your speed when sharing space with others.
- Ride at an appropriate distance from other riders around you.

Activity ideas

Hierarchy of road users

If you have a number of riders, give each of them a title of a person using a particular mode of transport (pedestrian, cyclist, e-bike rider, car driver, lorry driver). Ask them to rank themselves in order according to the hierarchy of road users, with those most vulnerable in the event of a collision at the top. Discuss how everyone has a responsibility to share space respectfully and to consider the potential risk that they pose to others. Also discuss the additional responsibilities that some road users have, for example how riders using heavier e-bikes hold an even greater responsibility to look out for others than riders using standard cycles. Consider carrying out this activity 'on the move' in a snake.

Practise snaking at different speeds

Ask a lead rider to sometimes change their speed, first telling the group they are slowing down or speeding up, then doing so without a verbal cue. Riders can adjust their e-bike power settings as they ride to help them keep up with the rider in front.

Revisit and review points from Activity Template 6. Discuss how the amount of space you give to a rider in front may change depending on the speed you are travelling. Typically at moderate and low speeds, this space can be the same as on a standard bike (1 bike length). But for higher speeds, and towards the maximum assisted motor assistance of 15.5mph, a larger gap (for example 2 bike lengths) should be used to allow for greater stopping distances. Highlight how such distances should be fluid or dynamic based on the changes of speed for the group. You can refer to The Highway Code Rule 126 to explain.

Sample questions to check understanding

Q. Where do you sit as an e-bike rider on the hierarchy of road users? What are your responsibilities?
Q. Who do you have to be especially careful around as an e-bike rider?
Q. What distance should you have from the rider in front when riding slowly, or quickly?

Differentiation

Inclusion

Where riders with hearing impairments cannot hear verbal communications between riders in the group regarding snaking distances, the riders and instructors agree together on an appropriate hand gesture-based communication strategy.

Extension

Simplify

Less confident riders can initially ride at the head or the rear of the snake and receive more support and supervision by an instructor. Once they develop their skills in managing their speed and distance from other riders, they can ride in different positions in the group.

Challenge

Ask riders to swap positions in the snake as they are riding. Provided riders are ready, challenge them to ride at closer-than-normal distances apart in order to develop their group riding technique. Manage risk when doing this by avoiding sudden braking and by reminding riders to cover brakes and to keep their head up.

Risk benefit assessment

Risk

A rider struggles to maintain consistent spacing and collides with the rider in front.

Mitigation

Position less accomplished riders at the front or rear of the snake where they can receive more support by an instructor. Also consider elongating rider spacing in the group the until they gain the skills and confidence to ride closer.

Benefits

Through progressing activities in a rider-led manner, riders develop their group riding technique smoothly and without incident.

11. Preparing for and planning a journey

National Standard reference: 1.3

Instructing points

- Understand battery output / levels and estimate how much battery charge you need to complete your journey. If charging is required during your ride, know where can this take place safely.
- Understand how route distance, gradients, terrain and speed all impact battery life and journey planning.
- Know how to park and lock your e-bike, understanding that it may be a higher value target for thieves.
- Understand how e-bike policies at your destination may differ so plan your journey accordingly.
- If using a hired e-bike, be familiar with hire requirements and costs, and how the app and docking/parking works.

Additional resources

If using hire e-bikes, many schemes have online maps that show where to find or dock cycles.

Activity ideas

Run your session as normal, but draw riders attention to additional factors that come into play when using an e-bike.

Managing your battery to complete your journey

Discuss how different power modes impact battery life, and where your range indicator is. Explore how much charge is required for your particular journey and what your options are should power levels run low.

Some e-bikes will have a display which estimates how much distance is possible before the next charge. This is an estimate and may change depending on how the e-bike is used.
Discuss what factors might affect battery range, for example, how it may reduce in colder weather conditions, or on hilly or rough terrain.

For trips which will exceed the expected battery range, riders should plan breaks for charging and take the battery charger, being mindful of where charging is possible and permitted.
Bear in mind that some premises will not permit e-bike charging. If charging is not possible on the route, discuss if the e-bike can be ridden without power assistance (this will differ between models). If using hire e-bikes, it may be possible to switch bikes or swap out batteries partway through the journey.

Activity ideas (continued)

Other journey planning considerations

Discuss with riders what might influence their journey planning choices if using an e-bike:

- Is an e-bike always the best choice for the journey? How quickly do they need to get to their destination, are they confident riding an e-bike and do they understand that everyone has a responsibility to ensure they do not put others at risk, especially those more vulnerable than themselves?
- Explore the potential impact of external pressures when riding. For example, if riding to a particular time schedule, discuss how obeying the rules of the road always take precedence over the time it takes to reach the destination (this is particularly pertinent for delivery riders who may feel pressured to deliver within a certain timeframe).
- Decide on the most appropriate route for each journey. The fastest route may not always be best depending on factors such as time of day.
- Consider what riding at higher speeds means when sharing space with others. It may enable riders to cycle more confidently in fasting moving traffic, but they will need to take extra care around road users who are more vulnerable such as pedestrians who are using a traffic-free area.
- Discuss how it is important to stay focussed when riding and how phone mounts may help with navigation, but can be a distraction. Mention that pulling over in a suitable place to check a phone or route is often the best option.

Accessibility issues and parking

Discuss with riders how it is important they can manage any technical aspects of their route, including steep gradients and physical barriers, steps or other restrictions that they might need to walk around or lift the e-bike over. Highlight how e-bikes are generally heavier especially if carrying luggage.

Explore with riders the best options for safe parking of their e-bike to minimise the chance of theft. Can it be stored inside a building or locked outside? Note that some building or facilities regulations, or certain insurance requirements and fire safety assessments, may not permit e-bikes, e-bike batteries, or charging on site. Riders may need to find an alternative place to park, lock, or store their e-bike. Access and parking should be checked before starting a journey where possible.

Discuss if, when locking an e-bike, it is possible to remove the battery and display and control unit, and take them with you.

Ensure riders understand how to use a lock and its quality (discuss the benefits of a ‘Sold Secure Gold’ rating as a minimum).

Sample questions to check understanding

Q. Can you always rely on being able to charge your e-bike battery at your destination?
Q. What might you do to ensure you can complete your journey?
Q. Before starting your journey, what might you need to consider for locking, parking or storing your e-bike at your final destination?

Differentiation

Inclusion

Riders should consider whether there is anything on the planned route which may prohibit heavier cycles, for example steps or motorcycle barriers on cycle tracks and bridleways.

Riders with certain disabilities or additional health needs may be disproportionately impacted by battery charge running out.

Extension

Simplify

Provide riders with a couple of pre-planned or familiar route options.

Challenge

Plan a journey with challenging elements that may bring riders into contact with more vulnerable road users and pedestrians, with the aim of ensuring riders gain experience moderating how they ride to help keep the risk to themselves and others low.

Risk benefit assessment

Risk

- A rider’s e-bike is stolen due to limited parking, locking or storing options.
- Just before reaching the destination, the route becomes impassable due to barriers and steps.

Mitigation

- Have a contingency option for locking and storing the e-bike nearby.
- Plan back-up route options before starting the journey and ensure riders have sufficient battery charge for any unforeseen extra journey time.

Benefits

Challenging situations provide the opportunity for reflection and learning in the moment, helping riders better prepare for future journeys and implement dynamic responses.

13. Cycling in suitable riding positions and passing parked vehicles

National Standard reference: 3.1.1, 4.1.1, 4.1.2, 4.2.1, 4.2.2

Instructing points

Potentially higher average speeds

- Understand that riding at higher speeds on an e-bike usually requires more assertive road positioning, and the need to observe, communicate and adjust position earlier.
- Manage the distance and space you have from other road users particularly when riding at higher speeds.
- Ride at a speed where it is possible to slow down enough or stop where needed.

Passing other road users

- Overtake slower riders and road users only when there is time and space to do so, doing so confidently, safely and courteously.
- Recognise that in many situations, it is better to wait behind a slower road user in front, and it is important to never rush.
- Understand and adhere to rules for overtaking as set out in The Highway Code (rules 162 - 169).

Additional resources

Using The Road - Overtaking

Activity ideas

Potentially higher average speeds

Discuss with the riders the risk and benefits of riding at potentially higher average speeds. Riders will likely mention faster journey times, but may miss the added complexity that faster riding may cause (more interactions with slower road users, less reaction time for hazards, fewer interactions with faster-moving road users). Ask riders if their positioning and communication will need to change when riding faster. They should understand that primary position should be used more when travelling at higher speeds and they will need to communicate and adjust position earlier. You can discuss how riding at higher speeds can make riding assertively easier, and reduce the likelihood of risky overtakes by people behind, but it is important to never rush.

Discuss with riders how when riding at higher speeds they take on added responsibility since risks they pose to themselves and others are likely to increase. Highlight how calm and predictable riding is important to reduce risk.

To give riders an experience of adjusting road positions (for example, by moving out to primary position for a road narrowing), it may be appropriate to deliver the activity on faster roads up to 30mph, as opposed to 20mph. These may provide opportunities for the riders to be passed by faster-moving traffic, which is less likely to occur on slower roads when riding on full power mode.

Activity ideas (continued)

Passing other road users

As an adjustment to the Starting and stopping activity, add passing other road users to the exercise either during it or as a progression activity.

Discuss how the potential acceleration and speed advantage of e-bikes can present opportunities to overtake slower riders and road users.

Explain that rules for overtaking are set out in detail in The Highway Code (rules 162 - 169) and advice for riders is the same as for other road users.

Rule 162

Before overtaking you should make sure

- the road is sufficiently clear ahead
- road users are not beginning to overtake you
- there is a suitable gap in front of the road user you plan to overtake.

Rule 163

Overtake only when it is safe and legal to do so

- not get too close to the vehicle you intend to overtake
- take extra care at night and in poor visibility when it is harder to judge speed and distance
- Cyclists may pass slower moving or stationary traffic on their right or left and should proceed with caution as the driver may not be able to see you. Be careful about doing so, particularly on the approach to junctions, and especially when deciding whether it is safe to pass lorries or other large vehicles.

You should advise riders to normally overtake slower moving riders on the right hand side, passing them wide, and to only overtake if they are to not come into conflict with road users in the oncoming lane.

Create opportunities for riders in the group to pass each other by having them ride at the same time. In some situations, it may also be possible to ask riders to pass other cyclists on the road who are not part of the group. You may require a longer section of road to create opportunities. Advise on the required speeds needed to create potential overtaking opportunities. The overtaking riders may use higher power settings to help them pass slower riders.

Sample questions to check understanding

Q. How might being able to travel faster by e-bike change how you apply the four key skills on the road?

Q. How might riding at higher speeds change how other road users behave around you?

Differentiation

Inclusion

Ensure all riders understand the need to ride and position themselves predictably and to never rush. Be clear that riders should normally overtake on the right-hand side of slower riders to reinforce this predictability.

Extension

Simplify

For the overtaking activity, less confident riders can start by being the rider who is passed, progressing onto overtaking other riders once they have built up their confidence.

Challenge

For a group of confident riders, consider offering less predictable advice on speed, have two riders travel slowly, or more quickly so they have to maintain appropriate spacing rather than overtake. Also consider having riders cycle in both directions on the road so they influence each other's overtaking decisions.

Risk benefit assessment

Risk

A rider misjudges an overtaking opportunity causing a collision.

Mitigation

Make it clear to all riders that they should ride predictably and at constant speed if being overtaken, and that overtaking road users should only pass if they have enough time and space to complete the manoeuvre.

Benefits

Riders develop knowledge, experience and understanding of how to overtake and what to do when being passed by faster road users.

15. Turning left into a minor road and right into a major road

National Standard reference: 3.1.1, 3.1.2, 3.2, 4.1.1, 4.1.2, 4.2.1, 4.2.2

Instructing points

Pedestrian priority

- Adhere to Highway Code rules (H1 + H2) about giving way to pedestrians crossing or waiting to cross at junctions.
- Ride predictably and control your speed and acceleration, in view of the risk you and your e-bike pose to pedestrians.

Acceleration, speed advantages and risks

- Adjust road position and to communicate earlier where necessary when negotiating junctions on an e-bike.
- Ride assertively when necessary for junctions.
- Be able to adjust speed and slow down sufficiently and in time for give way situations.

Activity ideas

Deliver the standard activity at busier locations where riders are more likely to have to interact with pedestrians. Consider having riders cycle longer distances and/or, if skills allow, to attempt the activity on uphill sections of road so they can experience the benefits of motor assistance.

Pedestrian Priority

Discuss situations where pedestrians have priority, and the need to moderate speed before turning to avoid potential conflict with pedestrians. Talk about the benefits of using primary position when riding at higher speeds in areas where there may be pedestrians. Discuss how the position allows for better sight of pedestrians, provides more space from them, and gives riders more time to react if pedestrians step out. Highlight the added responsibility that e-bike riders have compared to people using standard cycles due to the additional weight and potential speed of e-bikes.

If the location is not providing consistent interactions with pedestrians, consider asking a rider to behave as a pedestrian at a junction to create additional priority interactions for others who are riding.

Acceleration, speed advantages and risks

Deliver the typical junction activity but with adjustments. Busier areas with faster moving traffic may allow riders to practise riding assertively. Longer distances should create more opportunities for riders to adjust their road position. Gradients may allow riders to experience the benefits of e-bike motor assistance, such as when turning out of side roads on hills. U-turns should be undertaken at slow speed and only where there is sufficient space.

Activity ideas (continued)

Discuss how due to acceleration and potentially higher speeds when using an e-bike, primary position is likely to be used more frequently and earlier. Ensure riders are aware of the risk of overshooting when turning into or out of side roads, and the need for more space when manoeuvring at low speeds compared to when using a standard cycle. Elicit from riders how observations and communications with other road users will likely need to be carried out earlier, and potentially more frequently.

If delivering the activity to a group with more than one rider on the road at once, you can ask some riders to ride slower to allow faster moving riders to practise adjusting their speed and how they apply the four key skills.

Sample questions to check understanding

Q. When you are travelling at higher speeds, how might your road position be different?
Q. Who goes first at a junction? The rider turning in, or the pedestrian waiting to cross the side road?
Q. What is the risk of travelling too fast when turning?

Differentiation

Inclusion

If delivering activities to riders using a mixture of standard cycles and e-bikes, ensure that activities are manageable by all. At some sites, it may be possible to deliver the same activity but with riders on e-bikes cycling greater distances. Grouping riders into cohorts with or without e-bikes may be a solution but always consider the pros and cons of doing this.

Extension

Simplify
Use quieter junctions with good sightlines and little pedestrian activity. Have riders act as pedestrians if there is an absence of pedestrians in the area.

Challenge
Consider busier sites where pedestrian priority situations are more likely and where other road users are also likely to turn.

Combine elements of the passing other road users activity (see e-bike Template 13) with this activity - providing opportunities for riders to also overtake each other as they attempt this activity.

Risk benefit assessment

Risk

A rider fails to see a pedestrian crossing the road that they are turning into, resulting in them overshooting the turn and colliding with the kerb.

Mitigation

Ensure riders understand the importance of choosing an appropriate e-bike power mode for manoeuvring and turning, particularly at junctions where it is important to slow down and give way where necessary.

Benefits

Through practice, the rider is able to maintain good road positioning at junctions, adhere to priority rules, and minimise the chance of coming into conflict with other road users.

20. Using traffic lights and passing queuing traffic

National Standard reference: 3.1.1, 3.1.2, 3.2, 4.1.1, 4.1.2, 4.2.1, 4.2.2

Instructing points

Passing queuing traffic

- Moderate speed in view of e-motor assistance when filtering.
- Observe continuously, cover your brakes and always ride at a speed where it is possible to slow down or stop when filtering.
- When passing queuing traffic on the right-hand side, give yourself more room if filtering more quickly and use available space in the oncoming lane where appropriate. Be able to evaluate whether or not to filter in view of the risks, advantage gained, and the impact on other road users.

Traffic light-controlled junctions

- Use an appropriate power mode or throttle to help you to set off from junctions.
- Re-adjust power modes where appropriate once you are clear of the junction.

Activity ideas

Filtering

Discuss with riders how the speed and acceleration advantage of e-bikes can help with passing queuing traffic. Choose locations where there is an opportunity to filter on the right-hand side using the oncoming traffic lane. Discuss how the right-hand side (provided there is sufficient space and no right-turning vehicles) tends to be the better side to filter on due to the extra space and lower likelihood that passengers in cars will open doors. Explain that larger e-bikes also benefit from the extra room that is usually found on the right-hand side. Discuss how in some situations, a more central position in the right-hand lane can enable riders to pass the queuing traffic more quickly using their e-motor. Elicit from riders that when filtering on an e-bike, it is always important to look out for road users who might not see you, including pedestrians who may be crossing the road. Highlight how the added weight of an e-bike brings with it extra responsibility to take care around pedestrians.

Traffic light-controlled junctions:

You may be able to integrate the filtering activity into an activity where riders navigate a junction controlled by traffic lights. Choosing a busy junction where the traffic situation and priorities change quickly may help riders gain experience of the practical benefits of e-bikes, such as when selecting a higher power mode or using a throttle to accelerate off from a standstill.

Discuss how at junctions, filtering past only a few road users to reach the front may not be particularly helpful and may negatively impact other road users, who may overtake you again once they move off.

Sample questions to check understanding

Q. Why is it important to moderate your speed when filtering?

Q. How can the motor function of an e-bike help you when navigating traffic light-controlled junctions?

Differentiation

Inclusion

Some riders may use larger e-cycles that take up more space on the road, therefore limiting opportunities to pass queuing traffic. Consider sites that provide opportunities for all riders to filter but also discuss how riders of wider cycles are more likely to use a more traditional primary position on the approach to junctions.

Extension

Simplify

Only progress onto filtering activities at junctions once riders have first gained confidence and experience negotiating the same junction in the main traffic queue.

Challenge

Consider progressing onto larger and more complex traffic light-controlled junctions where riders are more likely to encounter other cyclists or larger vehicles with blind spots.

Provide riders with opportunities to filter past long traffic queues on straight sections of road where the traffic starts to move again, requiring the rider to dynamically move back into the traffic flow.

Risk benefit assessment

Risk

A rider misjudges their timing when filtering, leading to a road user suddenly having to slow down. The road user beeps the rider and this dents their confidence for the rest of the session.

Mitigation

Demonstrate and discuss effective filtering practices first and progress the activities in stages, first starting with a more straightforward activity where the rider passes standstill traffic up to an ASL only when the lights are red. The rider can then progress onto filtering past longer traffic queues that start moving when they feel ready.

Benefits

Though activities being progressed in a steady and rider-led manner, the rider gradually builds their confidence and experience, helping them develop their skills to cycle in more diverse environments.

21. Using cycling infrastructure

National Standard reference: 3.1.1, 3.1.2, 3.2, 4.1.1, 4.1.2, 4.2.1, 4.2.2

Amendments made post Open Trial? Yes / No

Instructing points

- Ride at appropriate speeds when using and sharing cycling infrastructure.
- Be able to safely and courteously pass other cyclists using cycling infrastructure.
- Slow down for and pass pedestrians wide, stopping for them where necessary.
- Evaluate the suitability of particular cycling infrastructure for your e-bike journey considering factors such as its design, width, how other road users interact with it, and the presence of other, more vulnerable road users.

Activity ideas

Discuss how the 'hierarchy of road users' concept relates to e-bike riders and the use of cycling infrastructure. Explore how when using protected cycling infrastructure, the rules and good practices for passing slower road users generally follow the same principles as when cycling on the road with motor traffic.

As e-bikes are capable of higher speeds and acceleration than standard cycles, ask riders to reflect on what risk they may pose to other riders, including those with less confidence or experience, and those travelling at lower speeds on the available cycling infrastructure. Be mindful that the cycling infrastructure may also be used by riders (for example, some road cyclists) who cycle at even higher speeds than themselves. Reinforce that predictable riding and good and frequent observations are crucial.

Discuss how the extent to which e-bike riders may need to moderate their speed around other, more vulnerable road users, may depend on the size and weight of their cycle (for example, e-cargo bikes will be even larger and heavier so their riders will carry inherently more responsibility).

Reinforce the point that the use of cycling infrastructure is not mandatory, and they should consider the benefits and risks of using particular infrastructure. Highlight how e-bike riders may gain more advantage, and reduce the risk they pose to others, by using the road with motor traffic. If it is possible, consider a location where riders can attempt the same journey using two contrasting routes – one that integrates cycling infrastructure, and another where they share the road with motor traffic. After completing both routes, discuss the pros and cons of each.

Sample questions to check understanding

Q. How does the 'hierarchy of road users' concept apply when you are sharing cycling infrastructure with other riders?

Q. How might our use of e-bikes affect our decisions on whether or not we use the available cycling infrastructure?

Differentiation

Inclusion

Riders using three-wheel cycles like e-motor-powered recumbents may require wider and smoother-surfaced cycling infrastructure.

Extension

Simplify

Make decisions about whether to use cycling infrastructure for the riders, demonstrating practically the principle of when infrastructure helps their journey, or not.

Challenge

Carry out a journey that gives choice to use cycling infrastructure at a busy time of day when there will be more cyclists and other road users. Ask the riders to make decisions as to whether to use the infrastructure or not.

Risk benefit assessment

Risk

A rider follows another cyclist in front after feeling pressured by the speed of other riders around them, and goes through a red light at a large crossroads with cycling infrastructure.

Mitigation

Highlight the potential risks of basing their decisions on the actions of other riders and the importance of not feeling pressured by others using the same space. Reinforce that rushing may put riders and others at risk.

Benefits

The rider learns to make informed, independent decisions when sharing space with others, enabling them to ride competently and confidently in progressively busy environments.

Commissioned By Hackney Council

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Charity reg number 1171111

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