**E-Cycle Training: Electric Bikes Brighton Experience**
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A group e-cycle lesson with several trainers and trainees, taking place in 2013 as part of the ‘smart e-bikes’ project

**This document**
Encouraging more people to cycle via the promotion of electrically-assisted bikes could have multiple public and private benefits including lowering carbon emissions and improving health and wellbeing. E-cycle training can play a key role in facilitating the uptake of electric cycling by a wide range of people. This document is intended for cycle trainers and their organisations, local councils and policy makers. It may also be of interest to the insurance industry. The first part contains information about e-bikes and a general overview of e-cycle training from our experience in Brighton. It is accompanied by an appendix which gives a detailed explanation of the cycle training activities that have been carried out.

**What is an e-bike?**
E-bikes look and work similarly to ordinary bicycles but have a small electric motor (powered by a rechargeable battery) that can be switched on to assist the rider. The amount of assistance from the motor reduces with increasing speed and cuts out altogether once the bike reaches 15mph or if the rider stops pedalling. ‘E-bike’ or ‘electric bike’ are popular terms for electrically-assisted bicycles (technically defined as ‘pedelecs’). This document does not cover other types of ‘e-bikes’ such as moped-style ones (where no pedalling is required) or ‘fast’ ones (which provide assistance above 15mph).

**Who might want to use one?**
E-bikes might encourage more people to cycle - or encourage people to cycle more. They make it easier to cycle uphill, against the wind, with heavy loads (children, shopping) or for longer journeys. They also have benefits for commuters who want to
arrive unruffled, older age groups, people with physical limitations, tourists and last mile delivery of goods.

What about health benefits?
“The bikes require the rider to pedal at all times and they are likely to provide at least moderate levels of physical activity for most people” explains Nanette Mutrie, Professor of Physical Activity for Health at the University of Edinburgh. She is a member of the ‘smart e-bikes’ project’s advisory panel and adds: “Use of such bikes will therefore be of potential health benefit to all those who need to increase their levels of physical activity and who use them in preference to undertaking less active types of travel or activity.”

Why e-cycle training?
There is no legal requirement to complete e-cycle training before using an e-bike, although many people taking up e-cycling would benefit from e-cycle training. First, e-cycle training is beneficial to any rider because riding an e-bike has some differences compared to riding an ordinary bike, requiring a range of additional skills around the use of the assistance. Second, many e-bike riders have not cycled for a long time or lack experience of cycling in traffic. E-cycle training familiarises cyclists (from all levels of experience) with the use of the assistance on the bike. E-bikes are mainly used by adults (not least given that they cannot legally be ridden by those aged under 14) and the training is therefore aimed at this audience. For the future, we envision that e-cycle training could form a module on the Bikeability curriculum and could be integrated into institutions’ and councils’ cycle work across the UK.

What about e-Bikeability?
"Bikeability is cycling proficiency for the 21st century, designed to give the next generation the skills and confidence to ride their bikes on today's roads" (http://bikeability.dft.gov.uk/). There are three levels: level 1 "control and master your bike", level 2 "deal with traffic on short journeys" and level 3 "deal with all types of road conditions and more challenging traffic situations" (http://bikeability.dft.gov.uk/). Bikeability is mainly aimed at children but also covers cycling skills for adults. We envision a future fourth part of bikeability that sits alongside the existing three levels and focuses on electric cycling because e-bike riding requires additional skills for controlling and mastering your bike (level 1) but also for use in traffic on short journeys (level 2) and in more challenging traffic (level 3).

What is the e-cycle training curriculum?
The training developed in Brighton comprises a range of considerations, so that trainers can tailor their session to take into account the possible wide range of existing cycling skills among participants. The full curriculum that has been developed is detailed in the document "E-bike Training for Trainers" (see appendix). The introduction to the e-bike includes: turning the power on and off, checking the battery charge, removing and installing the battery, plus changing assistance level between whilst riding (there is often a choice of three different levels, e.g. called eco, medium and high). Furthermore, it considers starting and stopping under assistance (including junctions and hills) and dangers around a false sense of security. Skills are practised away from traffic first (Bikeability level 1) and, when appropriate, progresses to light traffic (Bikeability level 2) and then challenging traffic (Bikeability level 3). Cycle trainers assess the skills on a checklist (see appendix). Optionally, trainers can record trainee feedback on the e-bikes and the e-cycle training. 

www.smart-ebikes.co.uk
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**What do e-cycle training participants think?**
The training has been overwhelmingly well received. Here are some responses of those who took part in the training:
'The training was fantastic'
'The cycle training was actually quite fun'
'The cycle training was quite useful: we went up onto the housing estate, that was helpful and it gave me confidence in how to switch between the different levels.'
'I picked up the bike, did the training, that was fine, picked up the controls very easily'
'We had the training before we got on the bikes which was really good.'
'I got lots of confidence straight away through getting off and on, and stopping was easy - it was great'
'The thing that attracted me in the whole project was that the bikes are electric and I live in such a mountain area around Brighton that coming up the hill is always an issue. And, then the fact that you had training and you could start the project even if you were not bike aware.'
'The training was good because I have not been cycling for 25 years'

**E-cycle trainer thoughts?**
Maria Robinson who co-developed the e-cycle training states: ‘The university wanted to make sure people are safe on the bikes. [...] I'm used to riding a bike and climbing hills but the average person isn't. So you see them smile when they are going up the hill. And their confidence on the roads when they are at traffic lights, and there's cars revving behind them and they can push off, it's the confidence it gives them’.
Bob Harber, one of the Brighton e-cycle trainers reports: 'It gives new horizons to people who might otherwise have been in a car' and 'I love to observe the sudden realisation of possibility by those participating in the e-training'.

**Why train more e-cycle trainers?**
As e-cycling grows in popularity and that uptake encourages a wider spread of cyclists it will be important that suitable training is in place to build cycling skills, promote safety and encourage confidence. Within the research programme we have piloted a training course specifically for e-bikes, as detailed in this document. Building on this, we envision the development of an e-bike bikeability module and the training of cycling trainers by the experienced group developed at Brighton – passing on the skills and knowledge so that, ideally there would be trainers accredited across the UK. This would work towards a vision of delivering e-cycle training in as many areas as possible, and ideally across the UK. Existing e-cycle trainers would recruit and train other cycle trainers to become e-cycle trainers. These could be listed in a growing database of e-cycle trainers.
During 2012 and 2013, over 100 people have participated in e-cycle training in Brighton and five cycle trainers have been trained up as e-cycle trainers.

**How about public events?**
'I love the instant smile of those trying an e-bike for the first time' states Dr. Vogt who has run public e-bike events across Europe and advises the 'smart e-bikes' project. E-cycle trainers can play a key role for events where members of the public can have a go on the bikes, for example as part of the council’s personalised travel planning (PTT), at community events, festivals, etc. Trainers supervise the use of the e-bikes as required without giving full lessons. These 'pop-up' events only need one or a small number of e-bikes to give a large number of people the opportunity to experience riding an e-bike without feeling any obligation to buy one. Health & safety and insurance need to be
considered for all events. A number of public events in Brighton, run with the safety and re-assurance of an e-cycle trainer, have shown to be a successful format for spreading the word about the benefits of electric bikes. Abby Hone, Principal Transport Planner, Brighton&Hove City Council: ‘People have been able to come along and give the bikes a go. It's been really inclusive’.

Can we use your training?
This e-bike training has been jointly developed by the ‘smart e-bikes' research project, led by Frauke Behrendt, University of Brighton, and Maria Robinson from M-Cycles in Brighton. You are welcome to use (any part of) this training free of charge under the condition that you inform us on email (f.behrendt@brighton.ac.uk) as we require feedback and data on its use and effect. We also need you to acknowledge us in any documentation with a reference to our website: www.smart-ebikes.co.uk/training. Thank you.

What about certified e-cycle training?
Currently, the e-cycle module is not officially accredited. We aim to work towards integrating the e-cycle module into other cycle training schemes, especially the national Bikeability scheme. Our training aims to develop into and contribute to a future standardised, quality-controlled and accredited e-cycle training module.

Why was this training developed?
The e-bike cycle training was developed as part of the 'smart e-bikes' research project (http://www.smart-ebikes.co.uk). This project is led by the University of Brighton, between 2011 and 2014 and is funded by the Research Councils UK. The aim of the project is to understand how people engage with (smart) e-cycling and the issues for policy, design/product development and research that could lead to a higher uptake of e-bikes in the UK, and thereby potentially reduce carbon emissions. This research project has loaned e-bikes to commuters and community groups for 6-8 week trial periods. To observe usage, the project developed an open-source fleet monitoring system with sensor integration. All participants in the project received e-cycle training, as part of trying to maximise the safety of the work and also to increase the appeal to a wide range of potential trial participants.

How can we contact you or learn more?
The ‘smart e-bikes' project website is: http://www.smart-ebikes.co.uk
More information on the e-cycle training is at www.smart-ebikes.co.uk/training
Frauke Behrendt, lead researcher on the ‘smart e-bikes’ project, University of Brighton, can be contacted at: f.behrendt@brighton.ac.uk
Maria Robinson, lead e-cycle trainer, M's Cycles, can be contacted through:
http://www.mscycles.co.uk, info@mscycles.co.uk
Videos about the e-cycle training are available at:
http://www.youtube.com/user/smartebikes
Bikeability information is available at: http://bikeability.dft.gov.uk/

Appendix 1: E-bike Training for Trainers (Curriculum)

Part 1: Introduction to bike
1. Adjust the seat to fit trainee. The seat should be high enough that their legs are slightly bent when they are in the down stroke of pedalling.
2. Check battery is fully charged. Important so it does not run out during lesson.
3. Check battery is locked in. Simply pull to make sure it does not come off bike. If unlocked, turn key to lock into place.
4. Show trainee how to turn power on, including location of the control panel with the on and off switch.
5. Illustrate how to change the power/assistance modes. There are typically three different modes. These are often labelled as follows:
   - eco - safe start and gentle assistance
   - med - increased assistance
   - high - hill climbing or windy conditions

Note: the assistance is gentle and quite deceptive. You need to pedal the same as an ordinary bike. It is not very noticeable when on the flat but, when going uphill, your pedalling effort stays the same. Try turning the assistance off and compare.

Part 2: Level 1 Bikeability skills
With e-bike training, you are not likely to know the skills of the rider until they turn up. Riders normally fall into one of the following categories:
   - they are a complete beginner and feel an e-bike will make riding easier to learn
   - they can ride (but might not have cycled for a long time) but are not confident with bike control and the e-bike could help with manoeuvres, particularly on-road
   - they lack fitness to ride more than a couple of miles and the e-bike will help for longer rides and hill climbing.
   - they are an experienced rider and want to feel the difference in riding an e-bike. The e-bike may be an option for extra-long commutes to work.

Set up training in an off-road environment, for example cones for slalom or turns to assess rider ability.

Part 3: Level 2 & 3 Bikeability skills
Get trainee to try all 3 levels of power in an off-road environment, then you can progress to Level 2 and 3 Bikeability.
Important notes for trainee on power-assisted bikes

- **Start on the lowest power setting as bike could run away from you when push applied to pedal**
- Set start and stop points similar to a junction to get trainee in habit of setting power to low before setting off
- **When riding an ordinary bike we often don't stop but slow down at junctions or traffic lights and keep the cranks moving. On a power-assisted bike, the bike will go forward at the power you are on.**
- It is fine to turn off power and ride bike without assistance.
- If you ride without assistance, you need to allow for a second of no pressure on the pedals if you decide to turn on the assistance.
- The more pressure you put onto your pedals, the more assistance you will get
- The assistance cuts out at 15 mph
- Best practice is to plan ahead; if you see a hill approaching, turn the power on beforehand and you will have your assistance as required from eco to high.
- E-bikes can sometimes give trainees a false sense of security when on roads as the easy pace can be a very enjoyable experience. Trainees need to be reminded that they still need to be aware of surroundings on- and off-road and to take their speed into consideration.

**Part 4: Feedback**
As the ‘smart e-bikes’ research project is compiling a study of people's e-bike experience, feedback is very important.
You will be supplied with a simple tick list (see appendix 2) showing what level each trainee has covered in a session. One box will be for trainees’ comments on using an e-bike.
# Appendix 2: E-Cycle Training Checklist

Training Check List for level 1, 2 & 3

## Trainer Details:

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## Trainee Details:

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Please confirm the trainee can perform the following activities by ticking the corresponding boxes

### Level 1

- Safe start and stop
- Maneuver round obstacles
- Looks behind before changing direction or overtaking
- Correct use of gears
- Can clearly indicate left and right taking hand off bar
- Emergency stop
- Simple bike check before riding
- Turn power on and off. Check battery charge. Remove and install battery.
- Change assistance level between eco, medium and high whilst riding.

### Level 2

- Start and finish a journey by road, including passing parked or slower moving vehicles
- Be aware of everything around them and signal their intentions allowing other road users to know what they are doing
- Position themselves properly on the road and pass side roads
- When approaching junctions, slow down and select correct power level for road conditions, traffic, and rider ability.
- Turn left into major and minor roads at a junction
- Turn right into major and minor roads at a junction

### Level 3

- Make a trip safely to work or elsewhere on any roads
- Use complex junctions and road features such as roundabouts, multi-lane roads and traffic lights
- “Filter”, to keep moving through stationary traffic
- Interpret road signs

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**Comment on using bike by trainee**

**Did trainee find training helpful**

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