EDUKADO

BIKEABILITY LEVEL 2 EVALUATION

Final Report April 2017

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Executive Summary

This report presents the findings of a two-phase project that aimed to evaluate the educational impact of the Bikeability Level 2 training programme in Stirling and Falkirk Local Authority areas in Scotland.

During the first phase, three focus groups were held with 30 children from three different schools, using the Nominal Group Technique, a consensus development method that is suitable for use with children. The aim of the groups was to generate response items that would be used in a subsequent survey in phase two of the project. In total 129 children from nine schools completed the survey.

Key Findings from the focus groups and survey

- The nominal groups and electronic survey were successfully piloted with the primary school children, and could easily be replicated in a wider study.
- The main learning reported by the children in the nominal groups related to their development of psychomotor skills, which reflects the skills based approach of the Bikeability programme, and the carrying out of safety checks.
- Survey participants reported that the Bikeability Level 2 training resulted in improvements in their cycling knowledge (81%); skills (87%); and feelings and confident towards cycling (79%).
- Areas in which the children felt least confident following the training related to their knowledge and skills in relation to primary and secondary positions on the road.
- The key topics that the children suggested for future learning were: cycling around roundabouts; using traffic lights; cycling on busy major roads; and advanced bike handling skills.

Recommendations for delivery of Bikeability Level 2

- Ensure training is delivered using an active teaching style; keeping talking to a minimum and psychomotor learning at the centre.
- Ensure consistency of delivery across schools.
- Review how road positioning is taught both in terms of cognition an skills acquisition.
- Deliver Bikeability training during school hours to demonstrate commitment to teaching cycling skills as a life skill (equivalent to the position of swimming)

Areas for future programme evaluation

- The current study could be replicated with a greater sample size, recruiting schools from other Local Authorities across Scotland, and could include objective/ observational methods for assessing safe cycling practices.
- The experiences of staff delivering Bikeability could be explored.
- The Bikeability trainers programme could be evaluated.
- The methods and consistency of delivery of the Bikeability programme across schools and Local Authorities could be explored.
- A longer term follow up study of the impact of Bikeability in terms of retention of knowledge and skills could be developed.
- A longer term investigation of children's attitudes to cycling and active travel.

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1 Introduction

Edukado was commissioned in 2016 to evaluate the educational impact of the Bikeability Level 2 programme. The aim of this evaluation was to generate data regarding the current and potential educational impact of Bikeability Level 2 on primary school children. This report presents the findings of a 2-phase project to evaluate the Bikeability Level 2 programme.

Bikeability Level 2 is a programme for children aged 10-11 (P5-6) which builds on Bikeability 1, introducing road safety as well cycling skills. The Bikeability programme follows the UK National Standard level 2 for cycle training. The Standard is set by the Department for Transport, in consultation with the Cycle Training Standards Board, of which Cycling Scotland and the Scottish Government are members. The aim of the Bikeability training is to encourage school-age children to ride a bike more often, by enhancing their skills and confidence to cycle safely on the road. More specifically, Bikeability is part of Transport Scotland's Cycling Action Plan for Scotland 2017-2020 (CAPS) to increase cycling as an active mode of travel.

The Bikeability programme, which is co-ordinated by Cycling Scotland in Scotland, replaced the Cycling Proficiency Scheme in 2011. Participating local authorities in Scotland opt to embed the Bikeability programme in their curriculum, either to be delivered within school hours or as an after-school activity.

The Bikeability programme is co-ordinated within each Local Authority area by the Council. A Bikeability co-ordinator is responsible for training the school staff who deliver Bikeability. Usually this is a paid member of staff who is supported by parent volunteers. However, in some schools the member of staff volunteers to deliver the programme after school hours. While Bikeability determines the content of the programme, the method, frequency, timing and staff delivery of the programme is determined at a local level. This means that there is great variability in the type of programme that children receive.

This report is structured in two parts representing the two phases of the project. The first phase of the project consisted of a focus groups with primary school children to generate the items in for survey about the educational impact of Bikeability Level 2. The second phase of the project gathered responses to the survey from all primary schools who participated in Bikeability Level 2 in Stirling and Falkirk Councils.

2 Phase 1: Focus Groups

2.1 What we did

2.1.1 Who took part

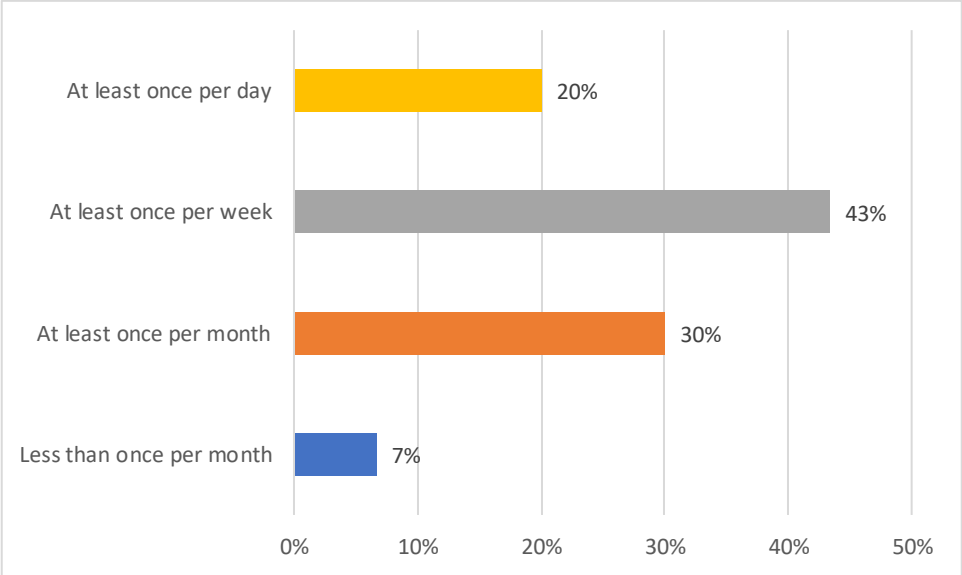
The schools selected for the inductive, generative phase of the evaluation were Raploch, Doune and Dunipace Primary Schools (PS) in Stirling and Falkirk Councils. Involvement of these schools enabled representation of children from a range of different socio-economic backgrounds, and urban, rural and suburban settings. Children from Primary 5 and 6 in each school were informed of the study by their class teachers who asked for volunteers from children who had completed the Bikeability Level 2 programme. A mix was sought of girls and boys in each group.

Children were invited if they had:

1. Completed the Bikeability Level 2 programme in session 2015/16;
2. Age appropriate reading and writing skills.

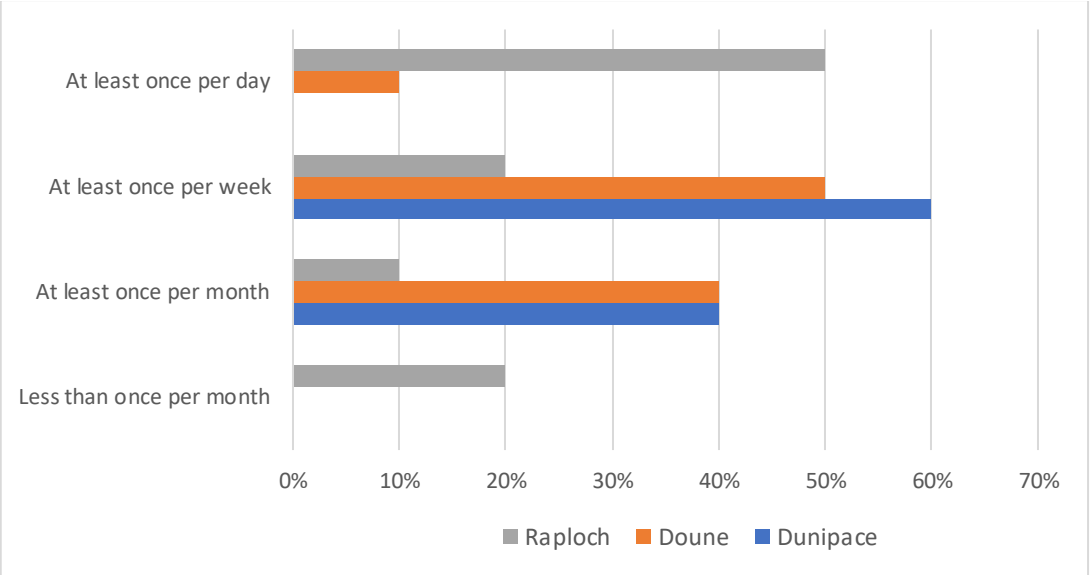
Thirty children volunteered to participate in the 3 nominal groups; 17 girls (57%) and 13 boys (43%), with a mean age of 10.2 ± 0.7 (range 9-12) years; almost all (97%) had their own bike. Cycling frequency varied across the children, with 63% cycling at least once per week and only 7% cycling less than once per month (Figure 1).

Figure 1: Cycling frequency of participants (n=30)



The pattern of cycling frequency was slightly different across the three schools (Figure 2). Notably, 50% of the participants at Raploch reported cycling at least once per day.

Figure 2: Cycling frequency per primary school



All the children had completed Bikeability Level 2 in the school year commencing in August 2015. Nearly all children had completed the Bikeability in the period May/June 2016. Some had undertaken the Bikeability Level 2 programme in November 20015. All children had completed Bikeability 1 prior to undertaken Bikeability Level 2. Some had completed this in the previous school year (2014-15), while a few had undertaken both programmes in the same school year (2015-16).

2.1.2 Study setting & materials

All three groups were conducted on school premises in rooms that were familiar to the children, i.e. a classroom, lunch hall, library. Two groups were held in the morning and one in the afternoon.

Figure 3: Nominal group set up in the library

The following materials were used to support the running of the nominal group:

- Research questions printed on A4 paper
- Name cards for all children
- Pens/ pencils
- Index cards for writing ideas
- Flipchart paper, pens and white tac adhesive
- Number stickers for rank ordering items
- Small prizes, e.g. pens, pencils, notebooks, bouncy balls

Each nominal group was facilitated by two Edukado researchers (LK/HG). The groups were conducted without teachers or Bikeability tutors present in the room to ensure that the children felt free to provide candid answers to the questions. Joe Shaw (Stirling Council Bikeability Co-ordinator) attended as an observer during the first group and half of the second group.

2.1.3 Ethical considerations

In keeping with good research practice, all participants were briefed before the groups began about the following:

- The purpose of the evaluation;
- Their right as volunteers to withdraw at any time without consequence;
- Informed consent;
- Confidentiality and how their comments may be used anonymously, so as to encourage openness and honesty.

One of the researchers read through the Participant Information Sheet (Appendix 1) with the children and time was taken to respond to any questions that they had. Following this, the children completed a demographics information sheet (Appendix 2); returned completed sheets were taken to be an indication of their informed consent. None of the children objected to participation in the nominal groups.

2.1.4 Nominal Group Technique

A consensus development method called the Nominal Group Technique (NGT) was employed to gather the views of children in terms of the educational impact of the Bikeability Level 2 programme.

The NGT is a face to face, small group, consensus development method that follows three stages: ideas generation; group discussion and clarification; and individual ranking and scoring (Fox, 1993; Potter et al., 2004). The underpinning philosophy of the NGT is rooted in co-production as it originally was established as a consensus development method in public sector, service user engagement settings (Van de Ven & Delbecq, 1972).

Research has demonstrated that the NGT results in participants generating a larger number and higher quality of ideas than traditional focus groups (Van de Ven & Delbecq, 1974; Herbert & Yost, 1979). It also enables enhanced confidentiality of responses and maximises each participant's

contribution. Additionally, the use of the NGT enables the amalgamation of the results from nominal groups that are conducted consecutively and/ or concurrently.

The nominal groups started with a 'warm up' to get the children familiarised into the group and focussed on the topic. The warm up consisted of them writing their names on the name cards and an easy, quick quiz with questions about cycling based on the Cycling Skills App by Cycling Scotland (e.g. correct position of a bike helmet; brake with strongest response). To motivate the children and maintain interest, small prizes (e.g. pencil, notebook, bouncy ball) were handed out for correct answers at various points throughout the groups, i.e. before answering each question and at end. By the end of each group all children had received a small prize to ensure that no one felt excluded.

During the nominal group technique, the children were asked to answer 2 questions:

Q1. What were the things that you learned from taking part in Bikeability?

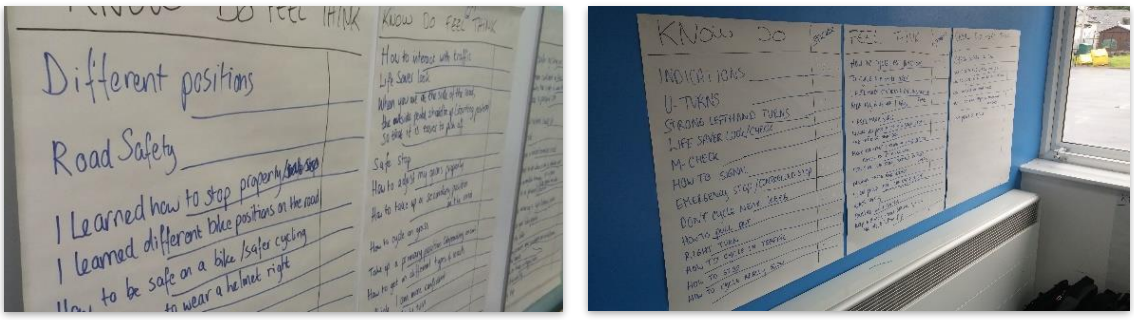
- Facilitator prompts: what do you know, do, think, feel different after taking part in Bikeability2?

Q2. What would you like to learn next about cycling and road safety?

- Facilitator prompts: If you were designing the Bikeability programme, how would you like it to be?

In pairs, the children were asked to write down each response on an index card. Each pair of children was given a stack of 10 index cards and was encouraged to write at least 10 responses, with more cards provided if they ran out. Once written, children were asked to place the cards in the middle of the table. One facilitator collected the cards from the table while the other wrote all answers down on flipcharts on the wall (Figure 4).

Figure 4: Flipcharts populated with items generated



Once the children ran out of ideas, one of the facilitators read out all the responses, obtaining clarification of unclear items, and asked for agreement from the children to ensure they were inclusive of all their ideas.

Figure 5: Ideas generation on index cards

The children were then given strips of sticker dots with numbers 1-5 on them. They were asked to place their 5 stickers on the flipcharts against their top five items in rank order of importance (number 1 = most important, number 5 = least important).

In the first group both nominal group questions were responded to one immediately after the other without a break. In the other two schools the groups answered Q1 before the morning break and Q2 afterwards.

At the end of the group, all children were thanked for their participation.

2.1.5 Data analysis

Large lists of items were generated by the children, even after duplicate removal; this resulted in a significant spread of ranked items across the lists. Decision making rules were set to determine, whether or not, an item was considered as reaching consensus. It was decided that if an item was selected by 3 or more children then it would be considered as important and included in the final analysis. In order to score each of the included items the ranks were reversed scored, i.e. rank 1 = score 5, rank 2 = score 4, rank 3 = score 3, rank 4 = score 2, and rank 5 = score 1.

2.2 What we found

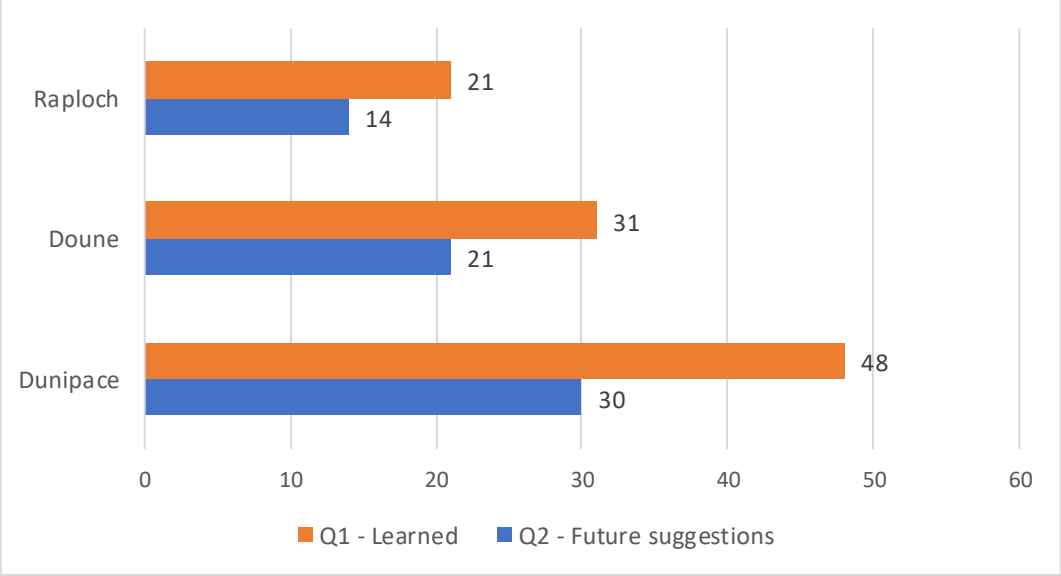
The researchers were very pleased to find that children at each school were very enthusiastic and engaged well with the research process to generate items and rank them.

Following the removal of duplicates, the groups generated a total of 165 items in response to the two questions set (see Table 1). The group from Dunipace PS generated the highest number of items (n=78), followed by Doune (n=52), and Raploch (n=35). In total, the groups generated more items (n=100) for question 1 (what they had learned) than for question 2 (n=65) (suggestions for the future). The full lists of all of the items generated by the children are in Appendices 1 to 5. Most items related to psychomotor skill development[1] (n=61 items), with fewer items relating to the

[1] The psychomotor domain (Simpson, 1972) includes physical movement, coordination, and use of the motor-skill areas.

affective domain learning[2] (n=22 items), e.g. fun cycling on the road; increased confidence, and the cognitive domain (n=17 items).

Figure 6: Number of items generated per group & question



2.2.1 Learning from Bikeability by school (Question 1)

Table 1 displays the findings for the items by the children at Raploch PS. The highest score an item could achieve was 50. As can be seen from the Table, the M-check was the highest scoring item (n=27), ranked by 6 out of the 10 children. They ranked this item as either most or second most important.

Table 1: Raploch PS - items reaching consensus for Q1

Item	Score						% of Group	Sum
M-check [bike safety checks before cycling]	5	5	5	4	4	4	60	27
Fun being on the road, like a car	5	4	3				30	12
Signal[ling]	4	3	3				30	10
More confident on my bike	5	2	1	1			40	9
Get off the bike before crossing the road	4	2	2	1			40	9
More safety	5	2	1				30	8
Safety stop	4	2	1				30	7
[How to] ride on road	3	2	2				30	7

[2] The affective domain (Krathwohl, Bloom, Masia, 1973) includes the manner in which we deal with things emotionally.

In Tables 2 and 3, the findings from Doune PS and Dunipace PS are displayed. The top ranking items at Doune PS include Indications [signalling] (ranked by 7 out of 10 children, score = 27); the emergency stop (ranked by 5 out of 10 children, score = 25) and the life-saver check (ranked by 4 out of 10 children, score = 20s). The M-check was ranked by 4 children, but received a much lower score (n=14) than for Raploch participants.

Table 2: Doune PS – items reaching consensus for Q1

Item	Score							% of Group	Sum
Indications [signalling]	4	4	4	4	4	4	3	70	27
Emergency/ controlled stop	5	5	5	5	5			50	25
Lifesaver look/ check	5	5	5	5				40	20
M-check [bike safety checks before cycling]	3	3	3	3	2			50	14
How to cycle past junctions	2	2	2					30	6
How to cycle really slowly	2	2	1					30	5
Always check your helmet	1	1	1					30	3

The two highest ranking items at Dunipace PS were the lifesaver look (ranked by 6 out of 10 children) and the different positions of the bike on the road (ranked by 5 out of 10 children), both receiving the same scores (sum=23).

Table 3: Dunipace PS – items reaching consensus for Q1

Item	Score						% of Group	Sum
Lifesaver look/ check	5	5	4	3	3	3	60	23
Different positions [primary/ secondary positions]	5	5	5	4	4		50	23
How to handle a junction	4	3	2	2			40	11
Left/ right turns	4	2	2	1			40	9
More confident around cars	3	3	1	1			40	8
Signalling	2	1	1	1			40	5

2.2.2 Future developments for Bikeability (Question 2)

Whilst we set out to evaluate the educational impact of the Bikeability programme, the children also commented on their satisfaction of it. At one of the schools, 90% of the children suggested that the programme should be called 'Walkability' or 'Talkability' due to the perceived amount of time spent talking about road safety and walking, rather than cycling. However, this did not seem to be an issue at the other two schools. This could suggest a difference in delivery of the training programme between schools.

The remaining items generated and ranked by the children as most important, while not all realistic, were mostly related to further development of psychomotor skills such as the ability to pump up your tyre; cycling no-handed and doing tricks (see Table 4).

Table 4: Raploch PS – items reaching consensus for Q2

Item	Score									% of Group	Sum
Call it 'talkability' (too much talking = boring)	5	5	5	5	4	4	3	2	1	90	34
Pump up your tyre	5	3	3	3	3	1				60	18
To learn how to cycle no-handed	5	4	4	3	1					50	17
Tricks	4	4	4	1						40	13
Cycle to secondary school	5	2	2	2						40	11
I want to learn to ride on major roads	3	3	2	1	1					50	10
[Run Bikeability] During school hours	4	3	1							30	8

In relation to the delivery of the programme children at Doune PS expressed their desire for longer Bikeability sessions. The further development of on-road skills was also identified by the children. For example, cycling around roundabouts and using fake traffic lights (in the absence of traffic lights suitable for practice in Doune) ranked highly (see Table 5).

Table 5: Doune PS – items reaching consensus for Q2

Item	Score									% of Group	Sum
Cycling around roundabouts	5	5	5	5	4	4	2			70	30
Make the sessions longer (one hour)	4	4	4	4	4	2	2	2	1	90	27
Using fake traffic lights	5	5	3	3	2					50	18
Off road cycling	5	4	3	1	1					50	14
Use road signs	4	3	3	2						40	12
Cycling on road in busy town/ city	5	3	2							30	10
Trickier stuff for more confident children on bike	2	2	1							30	5

Children at Dunipace also commented on delivery in terms of the suggestion to deliver Bikeability Level 2 in P4 rather than P5. They generated similar items to the children at Doune PS in terms of development of on-road psychomotor skills such traffic lights and roundabouts (see Table 6).

Table 6: Dunipace PS–items reaching consensus for Q2

Item	Score							% of Group	Sum
Traffic lights	5	5	5	5	5	4	1	70	30
How to do roundabouts	5	4	4	4	3	3		60	23
Start [Bikeability] in P4	4	3	3	3	2			50	15
[Cycle] on a busy major road	4	4	4					30	12
Cycling in a storm [bad weather conditions]	5	2	2					30	9
Road trip on a public road	4	2	1	1				40	8
How to help younger children	3	2	1					30	6

Of the 21 items that reached consensus for the question relating to future development across the groups, 4 items remained that were selected by more than one group. These 4 items were in related to development of further psychomotor skills (see Table 7).

Table 7: All items reaching consensus for Q2

Learning Domain	Items	% of group	No. of Responses	Sum
Psychomotor	Cycling around roundabouts	43	13	53
	Using (fake) traffic lights	40	12	48
	Cycling on road in busy town/ city/ on a busy major road	37	11	32
	'Trickier stuff' for more confident children	23	7	18

2.3 Summary Phase 1

Children across the 3 schools engaged well with the nominal group process and provided a large range of items that they had learned from undertaking Bikeability Level 2 training, across the 3 learning domains. Learning was predominantly identified in the psychomotor domain, reflecting the skills based approach of the programme. Children generally appeared to have enjoyed taking part in the training. The additional skills they wanted to develop related to increased skills in traffic and advanced skills in bike handling.

3 Phase 2: Survey

The next stage of the project consisted of the development of a survey based on response items from the nominal groups which addressed cognitive, psychomotor and affective learning domains. This survey was distributed to all primary schools in the Stirling and Falkirk Council areas which had run the Bikeability Level 2 programme in session 2015/16. The survey was distributed during January, February and March in session 2016/17, which enabled the children to reflect and report on the use and development of their cycling skills since completing the programme.

3.1 What we did

3.1.1 Ethical considerations

Consent was requested at the beginning of the survey by asking each child to check a box if they were happy to complete the survey. Only 3 questions in the survey asked for personal details, and these were limited to gender, age and school. No other identifiable details were part of the survey and children completed the survey anonymously.

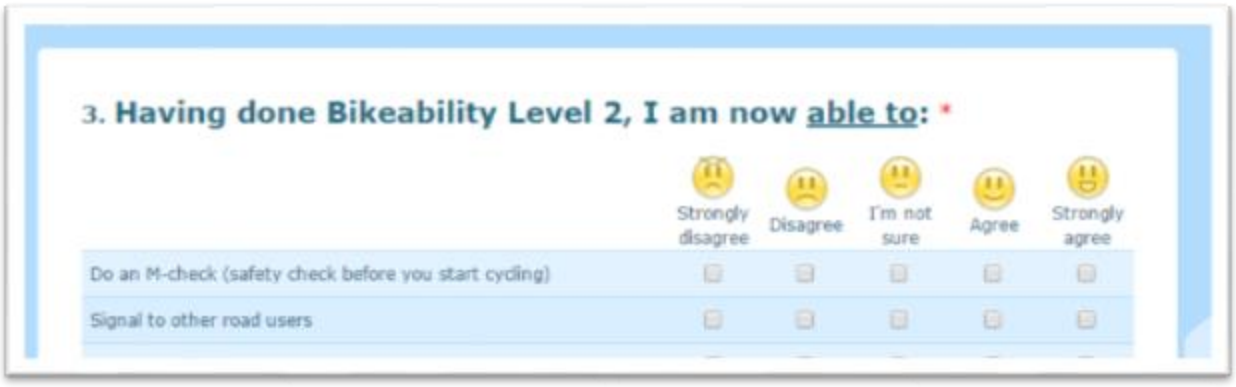
3.1.2 Survey design & piloting

The survey was structured in 3 parts. The first part asked children to confirm their attendance at Bikeability Level 2 training and consent to take part in the survey. The second part consisted of the main focus of the survey: pupils' learning in relation to the Bikeability programme. The final part asked pupils for demographic information including: gender; age; primary school attended; and primary year during which Bikeability Level 2 was undertaken (see Appendix 9 for the full survey).

For the second part of the survey all consensus items created by the children were pooled and categorised by learning domain. Each item was then reviewed in terms of suitability for the survey. The wording of some of the questions was slightly amended for clarity, but effort was made to retain the original words used by the children (Tables 8-10). Items were phrased to fit with the opening statements, e.g. 'I now know…'.

In the survey, each of these items was presented as a statement in terms of the child's learning following Bikeability Level 2 in relation to what they 'know' (cognitive domain), were able to 'do' (psychomotor domain), and 'feel' (affective domain). Children were asked to rate their agreement or disagreement with each item in the form of a 5-point Likert scale: strongly disagree; disagree; not sure; agree; strongly agree. To facilitate understanding of the rating scales, and increase accuracy of responding, emoticons were placed above each rating. SmartSurvey online software was used to create, collate and analyse the questionnaire. See Figure 7 for a snapshot of the survey with the items and Likert scale. In total there were 8 cognitive, 8 psychomotor and 7 affective domain statements that the children rated.

Figure 7: Adaptation of consensus items for the affective domain



To establish how long it would take to complete the survey and to verify that statements were readable for the target audience, the survey was piloted with two 9-year old girls (P5) known to the researchers. The survey was completed by both girls in less than 10 minutes. No issues were raised regarding the phrasing of the questions. The survey was then sent to Christopher Johnson (Cycling Scotland) for check questions for accuracy and ensure that statements were aligned with the Bikeability Level 2 curriculum. This resulted in minor adaptations (e.g. combining terminology which to signalling) and splitting up the question related to turning left and right as these required different skills. The final items can be found in Tables 8-10.

Table 8: Adaptation of consensus items for cognitive skills

Cognitive Domain – I now know…	
Original items	**Final survey items**
Get off the bike before crossing the road	I should get off my bike and push it if I don't feel safe
How to interact with traffic	How to interact with traffic
The car door might open	A car door might open
Always check your helmet	How to check my helmet is fitted correctly
Know why primary & secondary are different sides of the road	When to use the primary and secondary positions
How to check my bike	How to check my bike
How to go from major to minor roads & back	How to turn from a major road
Ride on path, not pavement [illegal]	How to turn from a minor road
Road safety	Statement too ambiguous for survey

Table 9: Adaptation of consensus items for the psychomotor skills

Psychomotor Domain – I am now able to…	
Original items	**Final survey items**
M-check [bike safety checks before cycling]	Do an M-check (safety check before you start cycling)
[how to] signal (to cars); Indications	Signal to other road users
Emergency/ controlled stop	Do a controlled stop
Safety stop	Do an emergency stop
Different positions [primary/ secondary positions]	Go to the primary/secondary position on the road
Lifesaver look/ check	Do a lifesaver check (looking over your shoulder before turning)
Left/ right turns	Turn left at a junction
How to cycle past junctions	Turn right at a junction
How to cycle really slowly	Statement too ambiguous for survey
[How to] ride on road	Statement too ambiguous for survey

Table 10: Adaptation of consensus items for the affective domain

Affective Domain – I now feel…	
Original items	**Final survey items**
More confident on my bike	More confident on my bike
More confident around cars	More confident around cars
Fun being on the road, like a car; Some parts fun	It's more fun being on the road with other traffic
Feel safer cycling on road	Safer cycling on road
Feel much safer passing car doors; More safety	Much safer passing car doors
It's scary to be on the road; Cars can run you down	It's less scary to be on the road
Proud of myself	Proud of myself
Wear a helmet	Statement too ambiguous for survey

3.1.3 Survey distribution

In order to distribute the survey an invitation and information letter was emailed to schools participating in the Bikeability programme in Falkirk (n=39) and Stirling Council areas (n=40) by Joe Shaw (Bikeability co-ordinator, Stirling Council, at the time). A complete list of schools can be found in Appendix 11. The letter explained the aim of the survey and included a URL with access to the online survey. It was left up to schools to decide when pupils completed the survey.

3.2 What we found

3.2.1 Survey responses

The aim of Phase 2 was to collect 500 responses. In total 145 pupils accessed the survey between February and April 2017. Fourteen of these pupils partially completed the survey, leaving a total of 131 responses. Of these, one respondent stated that they had not completed Bikeability level 2;

then continued to complete the full survey. The responses for this pupil were included, as it was assumed that this pupil had in fact completed the training. Data were removed for two pupils who did not consent and then did not fully complete the survey. This left a dataset for 129 respondents, whose findings will be discussed in the following sections.

3.2.2 Respondent demographics

Pupils from 9 of the schools invited participated in the survey (Figure 8). The survey was completed by 74 (57%) girls and 55 (43%) boys. The respondents ranged in age from age 8 to 12, with the majority (71%) aged 11 (Figure 9). The vast majority of respondents (85%) completed Bikeability when they were in P6, with 5% completing it in P7, and 1% in P5. Interestingly, 9% could not remember when they had completed it.

Figure 8: Distribution of respondents across primary schools

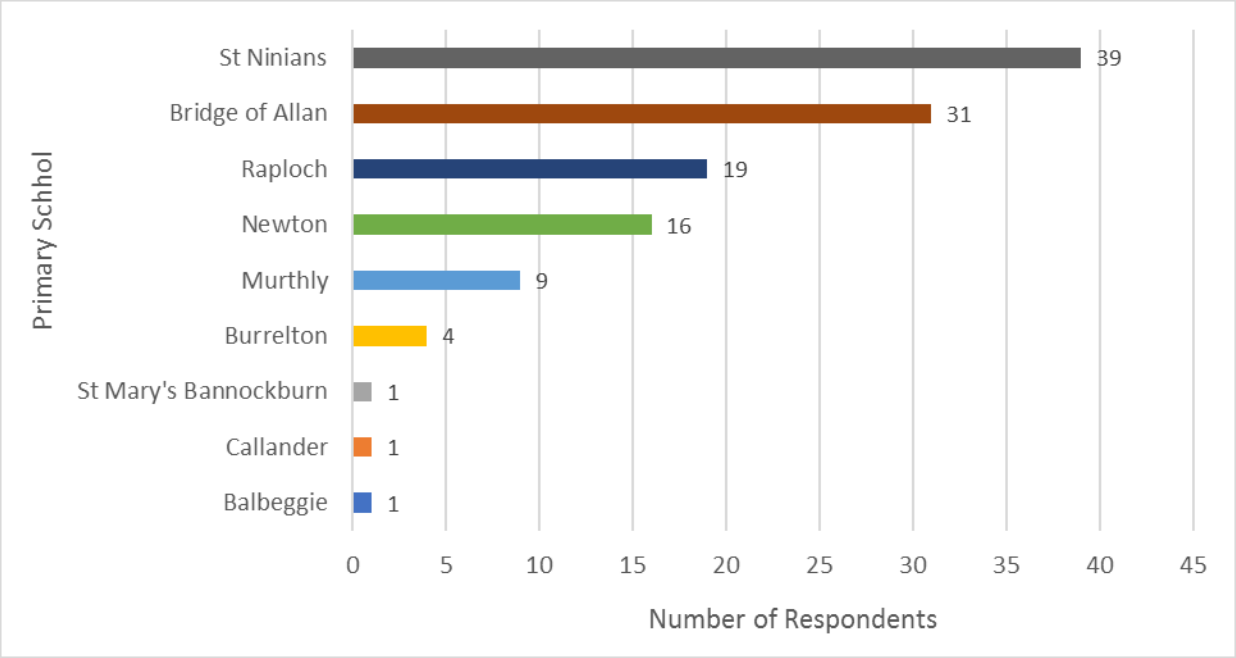
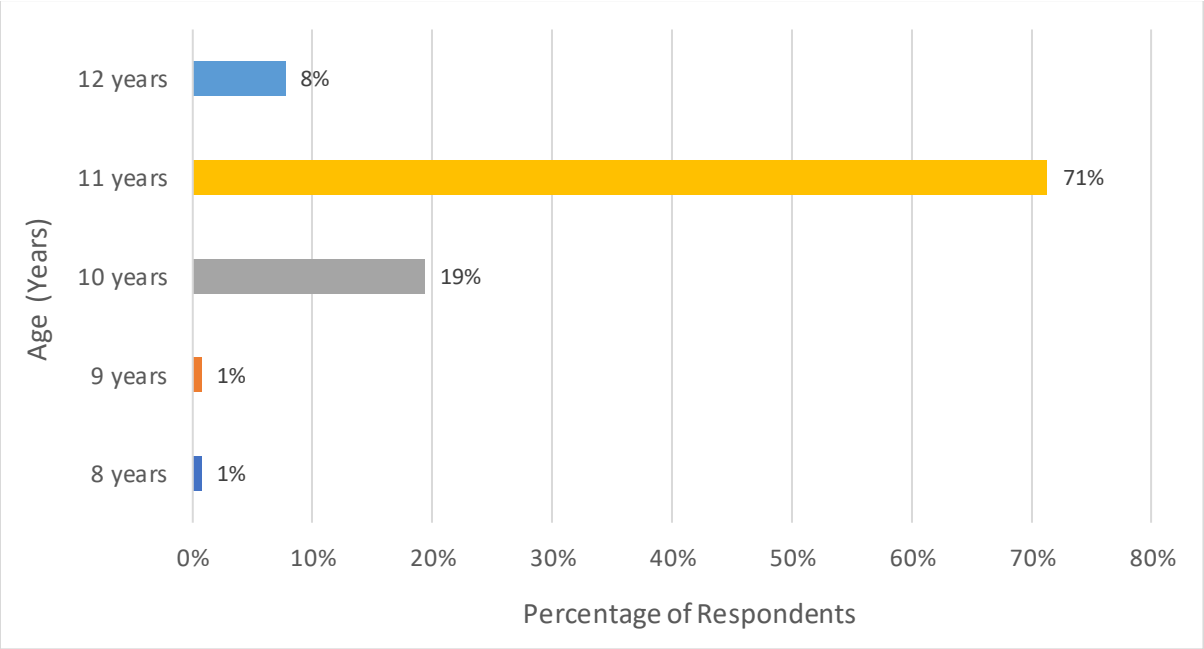


Figure 9: Ages of respondents



3.2.3 Learning from Bikeability Level 2

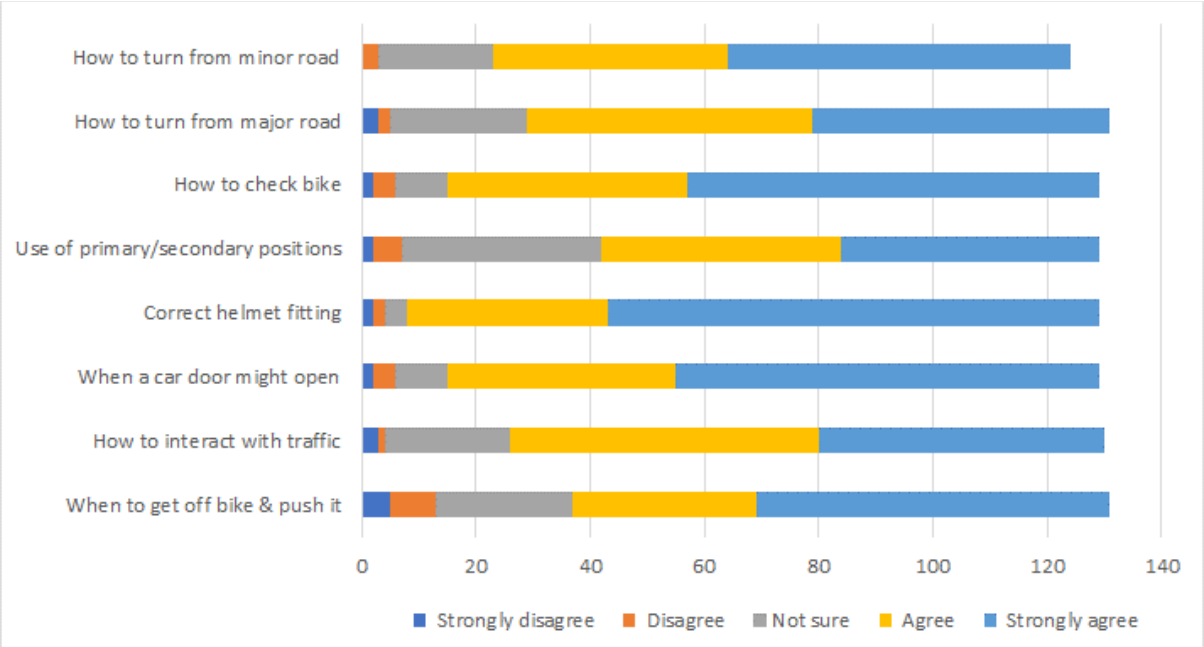
The responses from pupils were overall very positive, suggesting that pupils perceived to have taken considerable learning from the programme.

3.2.3.1 Cognitive domain learning

Figure 10 illustrates the responses from pupils regarding learning in the cognitive domain. Items which reached the highest level of agreement (in yellow and blue) were: 'When a car door might open' (88%); 'How to check bike' (88%), and 'Correct helmet fitting' (94%). The greatest number of 'unsure' responses (in grey) were given for 'Use of primary and secondary positions' (27%). This may suggest that pupils were unfamiliar with the terminology, or it suggests that pupils continued to struggle with the concept of primary and secondary positions on the road[3]. The items which pupils stated greatest disagreement of learning with was with the item 'When to get off bike & push it' (10%).

[3] The primary road position refers to the general flow of traffic and the secondary road position refers to the normal riding position of a cyclist. Source: Bitesize Bikeability: Part 4: On-Road Positioning, British Cycling.

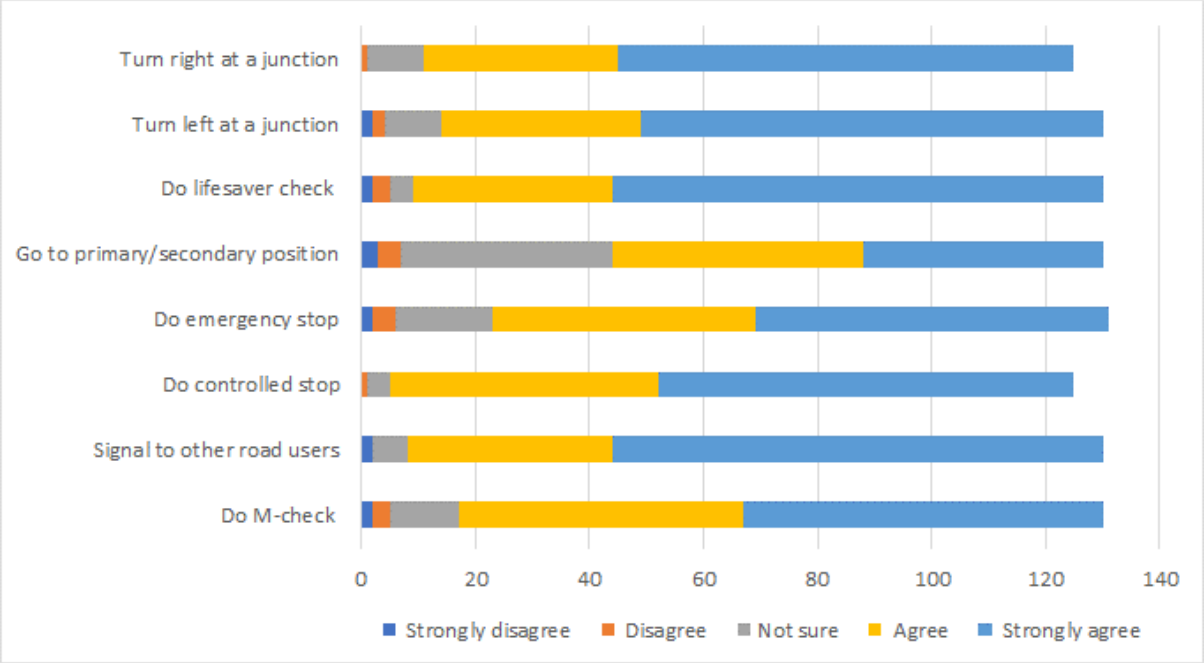
Figure 10: Knowledge obtained during Bikeability Level 2



3.2.3.2 Psychomotor domain learning

In relation to psychomotor skills, pupils rated the items 'Signal to other road users' (94%); 'Do lifesaver check' (93%), and 'Do Controlled Stop' (96%) highest (Figure 11). Similar to the learning in the cognitive domain in Figure 10, pupils were most unsure about (28%) and rated the item with the lowest agreement (5%) 'To go to primary/secondary position'.

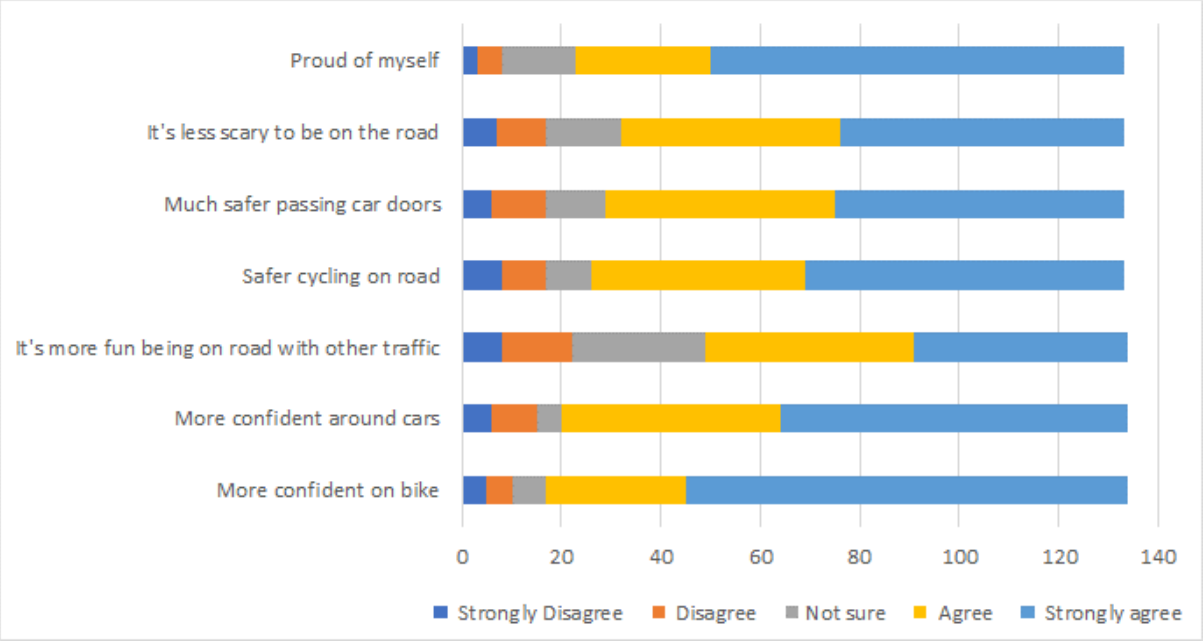
Figure 11: Skills developed during Bikeability Level 2



3.2.3.3 *Affective domain learning*

Figure 12 illustrates pupils' learning in the affective domain in terms an overall increase in confidence 'on the bike' (87%) and 'around cars' (85%). In addition, 83% of pupils agreed with the statement '[I feel] proud of myself'. Following Bikeability 37% of pupils did not agree that they felt that it was more fun being on the road with other traffic; however, the majority (63%) did.

Figure 12: Feelings experienced following Bikeability Level 2



4 Discussion

4.1 Summary of key findings

The aim of the Bikeability training is to encourage school-age children to ride a bike more often, by enhancing their skills and confidence to cycle safely on the road. More specifically, Bikeability is part of Transport Scotland's Cycling Action Plan for Scotland 2017-2020 (CAPS) to increase cycling as an active mode of travel. While Bikeability Level 1 training focusses on bike handling skills, Bikeability Level 2 training aims to provide children with basic road safety skills and confidence to cycle safely on public roads.

This report presents the first educational evaluation of Bikeability Level 2 training in Scotland investigating school pupils' perceptions of their learning during the Bikeability Level 2 training. The training was perceived very positively by 83% of pupils across cognitive, psychomotor and affective learning domains. 81% of children reported an increase in knowledge, 87% reported an improvement in skills, and 79% reported improvements in their feelings towards cycling.

Learning in the cognitive domain related to children's preparedness to cycle and management of risk, in terms of knowing how to check the safety of their bike and how to correctly fit a helmet. In addition, risk awareness while cycling was demonstrated in the item related to knowing 'when a car door might open'. This confirms the findings of Richmond et al (2014) and Hodgson and Worth (2015) who also found that cycling training is effective in improving children's knowledge of road safety.

The children reported increased psychomotor skills in terms of communication with other road users (signalling); risk awareness (conducting life saver check) and risk management (controlled stop). This resulted in their increased confidence in riding their bike and, in particular, around cars on the road. The item in which pupils demonstrated the least learning, in terms of both knowledge and skills, related to the use of primary and secondary road positions. The alignment of these two learning domains in this topic supports the validity of the survey. However, it must be recognised that the children's perceived increases in psychomotor skills were self-reported; therefore it is not possible to conclude that their road safety skills had objectively improved.

Hodgson and Worth (2015), in a study evaluating Bikeability Level 2 training in London schools, assessed pupils for both knowledge and practical skills, rather than relying on self-report. They found that there was an overall correlation between an increase in knowledge and practical cycling skills (r=0.4). However, when broken down into the domains of safe cycling practice (Observation, Communication[4], Road Positioning[5] and Priorities[6]) they found that knowledge in road positioning did not translate into practical skills at 2-3 week and 2-3 month follow up. Communication with other road users was not correlated with knowledge at 2-3 weeks, but was at 2-3 months follow up.

[4] Signalling to other traffic
[5] Position of the bike in relation to the width of the road
[6] The right of one vehicle to proceed before another.

In contrast, knowledge of 'Priorities' was correlated with practical ability 2-3 weeks following training (r=0.4), but not at 2-3 months follow up (r=0.02). The correlation between knowledge and practical abilities was consistent for observation of traffic, although this also deteriorated over time. The authors concluded that, while knowledge correlated with practical skills following cycle safety training, additional practical training was required to maintain the translation of knowledge into safe cycling practice.

In contrast, Richmond et al's (2015) systematic review of 25 studies concluded that increased knowledge did not automatically translate into improved cycling skill levels. While, the authors state that the research evidence they reviewed was of poor quality; this finding is concerning as perceived cognitive domain learning may not translate to actual safer cycling practices and skills.

The most ambiguous item for the children in the current study was their learning in relation to knowledge of, and ability to, adopt primary and secondary positions on the road. Hodgson and Worth (2015) found that while pupils' knowledge of road positions was significantly improved immediately following training (effect size 1.39) and 2 months later in an on-screen quiz (effect size 1.54), the practical skills assessment demonstrated that pupils were least likely to maintain road position skills. This may be mirrored in the pupils who took part in our Bikeability survey, as the survey was completed by pupils several months after completion of the training programme. As stated previously, Hodgson and Worth found that the knowledge and practical skills related to road positioning were poorly correlated (0.2, n.s.).

In the absence of a dedicated cycle lane, knowledge and skills of road positioning are essential for the safety of the child on the road. Cyclists are advised to position themselves at least one metre from the kerb (secondary position) and further from the kerb where a road is too narrow for cars to pass safely (primary position) (Franklin, 2007). Adopting a primary position on the road reduces the risk of a driver overtaking a cyclist when it is inappropriate to do so (Hunter et al., 2011).

These findings suggest that further research is needed to explore the relationship between knowledge and actual safe cycling practices, such as how best to facilitate this translation of knowledge into practice, in terms of teaching and learning strategies. Furthermore, objective assessments of cycling practices of pupils would enhance the validity of self-reported survey findings in the psychomotor domain. The decrease in road positioning skills reported by Hodgson and Worth (2015) after only 2-3 months, and the low ratings of pupils' knowledge and skills in relation to road positioning, also suggest that regular updates and ongoing training regarding road positioning is required.

In the affective domain, pupils reported a sense of pride because of their participation in Bikeability Level 2 training. The findings in the affective domain are mirrored in the findings of the Hodgson and Worth (2015) study, which found a statistically significant increase in pupils reported confidence levels (effect size 0.53). The fact that 37% of the children in our study did not agree that is was more fun cycling on the road was also mirrored in the Hodgson and Worth study, which failed to find a statistically significant increase in cycling 'enjoyment' after pupils took part in Bikeability training.

While the current study found perceived improvements across the three learning domains, it is not possible to deduct from these findings if children increased how often they cycled generally and/or to school. These would be useful data to collect pre-and post Bikeability Level 2 training. However, the relationship between cycling training and resultant cycling to school has been explored in several other research studies and appears to lead to contradictory conclusions. For example, results from a study by Frearson (2013) found that children who undertook the English equivalent of Bikeability training in Cambridge, were more likely to cycle to school than untrained children. This finding, however, is not supported, in the systematic review by Richmond et al (2015), which concluded that cycling training does not influence the number of children cycling to school.

There was a gradual increase in the percentage of children cycling to primary school in Scotland between 2008-2013 from 3.4% to 5.0%, but this only marginally increased to 5.1% in 2015 (CAPS 2017-2020). It is not possible to isolate the role of Bikeability Level 2 training in the number of children cycling to school, as the reasons for these are multifactorial. It does, however, raise questions regarding the effectiveness of Bikeability Level 2 training in encouraging children to cycle to school, and, for example, the timing when it is delivered in primary schools. In the current study, Bikeability Level 2 training was most commonly delivered in P6. If Bikeability Level 2 is perceived as a means of preparing children to use a bike as a method of active travel, only those in late P6 and P7 would be considered suitable to cycle to school. Therefore, while Bikeability Level 2 training enhances pupils' confidence on the road and a possible increase in cycling for leisure purposes, the relatively late delivery of Bikeability Level 2 in P6 is unlikely to contribute to an increase in children cycling to school. Further investigation is needed in terms of the most effective timing of the Bikeability Levels of training to encourage the uptake of more children cycling to school. In addition, a longer-term study of the impact of cycling training on bicycle use (leisure and transport) in children when they transition to secondary school and into adulthood would increase the understanding of behaviours and attitudes to cycling.

In the first phase of this study we asked children what their future learning needs were in relation to cycling following Bikeability Level 2. Children across the three groups used this opportunity to report on their satisfaction with Bikeability Level 2. This raised a number of issues that would be worthy of further investigation. For example, the difference in responses of the children across the three schools, highlighted that there may be considerable differences in how the programme is delivered. In particular, the pupils from one school recommended that the programme be called 'Walkability' or 'Talkability'. This suggests that there may be at times too much time spent on delivering theory and insufficient time on the practical element of the training. Considering the evidence regarding the difficulties of translating knowledge into cycling practice, this is an important issue.

The differences in delivery of the training raises questions regarding the most effective way of delivering a skills-based programme; the effectiveness of training received by trainers; and the consistency of delivery of the Bikeability programme across schools. Moreover, it suggests that further exploration of those delivering Bikeability training in primary schools is needed.

4.2 Study strengths & limitations

One of the key strengths of the first phase of this study was the excellent engagement from the pupils who generate a very large number (n=165) of learning points from the Bikeability Level 2 programme. The use of the nominal group technique (NGT) was very effective in enabling pupils to prioritise the learning that they feel benefited them the most. In phase two of the study, the fact that the survey response items were generated by the children themselves increased the validity of the survey and should have assisted in its ease of completion by the children, making it a useful tool to be used in future studies.

While the invitation letter for the survey was distributed to 79 schools across the Falkirk and Stirling Councils, pupils from only nine schools (11%) completed the survey. This response rate is not too dissimilar from the findings of Hodgson and Worth (2015) where 335 schools across London were approached, of which only 27 (8%) agreed to participate. The low uptake of the survey is disappointing and a limitation of this study. Additionally, as the researchers were not provided with information as to the total number of children who took part in Bikeability Level 2 across the 79 schools, it was not possible to identify the percentage response rates for this study.

The small nature of this study reduces the generalisability of findings to other regions in Scotland. This suggests that more research is needed which includes a greater sample size, and draws participants from across Scotland.

4.3 Recommendations for programme delivery and future evaluation.

Based on the findings from the consensus groups and the survey results, the following recommendations are made for the delivery of Bikeability Level 2 training:

1. Ensure training is delivered using an active teaching style; keeping talking to a minimum and psychomotor learning at the centre.
2. Ensure consistency of delivery across schools.
3. Review how road positioning is taught both in terms of cognition an skills acquisition.
4. Deliver Bikeability training during school hours to demonstrate commitment to teaching cycling skills as a life skill (equivalent to the position of swimming)

The following are suggested areas for further programme evaluation:

1. Explore pupils' reasoning patterns concerning road positioning and how to enhance its teaching
2. Consistency of delivery
    a. Road safety practice skills; do trainers actually go out on roads with pupils
    b. Learning and Teaching styles of trainers
    c. Effectiveness of training for trainers
3. Experiences of trainers and volunteers
    a. How confident are trainers in delivering BL2 to pupils?
    b. What are their support, training and learning needs?
4. The current study could be replicated with a greater sample size, recruiting schools from other Local Authorities across Scotland.

5. Use observational/objective methods for assessing safe cycling practices
6. Explore the relationship between objective and self-reporting of cognitive and psychomotor learning

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6 Appendices

Appendix 1: Participant information sheet

What did you learn from Bikeability?

Research Information Leaflet

What is it about?

You are invited to take part in a small research project to evaluate Bikeability in your school.

Who is doing the evaluation?

The study is done by Larissa Kempenaar and Heather Gray. Both Larissa and Heather have carried out lots of research before. They are part of a company called Edukado. Edukado is a small research company set up in 2015 in Glasgow. Edukado have been asked to carry out this research by Cycling Scotland.

Why are we doing this research?

The aim of this research is to talk to children who took part in Bikeability at their school. There is some proof that taking part in the Bikeability course is helpful to children in some ways. What we would like to find out is what children have learned from doing Bikeability. Using the answers, we want to make a quiz which we can use with other children in Scotland.

Who asked you to do this research?

The study is funded by Cycling Scotland.

Do you have to take part?

No, taking part in this study is up to you and you are free to leave at any point during the meeting.

What will you be doing?

We will have a meeting with 10 children chosen by your teacher for about 1 hour. It depends on

your teacher if you will be chosen to take part. In the meeting we will ask you what you think you have learned from doing Bikeability. We will also be asking these same questions at 2 other primary schools. There are no right or wrong answers to the questions. We just want to find out your views.

Will my teacher or anyone else find out what I said during the meeting?

No, anything you say in the meeting will be kept private. We only use the words that you write down during the meeting. We will not use your name in any of the reports. If you are unhappy at any point during the meeting, you are free to go.

What if I have more questions?

If you have any further questions about any of the information in this leaflet, please ask Heather or Larissa.

This study is funded by Cycling Scotland.

Approval for access to primary schools was granted by Stirling and Falkirk Council.

What happens next?

If you are happy to take part, we will now ask you some questions about what you think about Bikeability.

Appendix 2: Demographics information sheet

Cycling Scotland

Bikeability evaluation

Demographics Information Sheet

School:	Raploch PS ❑	Doune PS ❑	Dunipace PS ❑		
Did you complete the Bikeability programme this year?	Yes ❑	No ❑			
How many sessions did you take part in?	_____				
What is your age?	_____				
Are you a…	Boy ❑	Girl ❑			
Do you own a bike?	Yes ❑	No ❑			
How often do you cycle?	Never ❑	At least once a year ❑	At least once a month ❑	At least once a week ❑	At least once a day ❑

Appendix 3: Raploch PS items generated for Q1

Group	Question	Item	Learning Domain	Score	Score	Score	Score	Score	Score	Score	Score	Score	No. of Responses
1	1	M-check [bike safety checks before cycling]	Psychomotor	5	5	5	4	4	4				6
1	1	Fun being on the road, like a car	Affective	5	4	3							3
1	1	[how to] signal (to cars)	Psychomotor	4	3	3							3
1	1	More confident on my bike	Affective	5	2	1	1						4
1	1	Get off the bike before crossing the road	Cognitive	4	2	2	1						4
1	1	More safety	Affective	5	2	1							3
1	1	[How to] ride on road	Psychomotor	3	2	2							3
1	1	Safety stop	Psychomotor	4	2	1							3
1	1	Cars can run you down	Affective	5	1								2
1	1	Ride on road	Psychomotor	5									1
1	1	Use brakes	Psychomotor	3	2								2
1	1	Ride on path, not pavement [illegal]	Cognitive	3	1								2
1	1	It's scary to be on the road	Affective	4									1
1	1	Emergency stop	Psychomotor	3									1
1	1	Wear a helmet	Affective	3									1
1	1	Quick release	Psychomotor	3									1
1	1	Some parts fun	Affective	2									1
1	1	Manoeuvre	Psychomotor	2									1
1	1	How to cycle	Psychomotor	1									1
1	1	How to check my bike	Cognitive	1									1
1	1	I'm allowed to go on the road	Affective										0

Appendix 4: Raploch PS items generated for Q2

Group	Question	Item	Learning Domain	Score	Score	Score	Score	Score	Score	Score	Score	Score	No. of Responses
1	2	Call it 'talkability' (too much talking = boring)	Affective	5	5	5	5	4	4	3	2	1	9
1	2	Pump up your tyre	Psychomotor	5	3	3	3	3	1				6
1	2	To learn how to cycle no-handed	Psychomotor	5	4	4	3	1					5
1	2	Tricks	Psychomotor	4	4	4	1						4
1	2	Cycle to secondary school	Psychomotor	5	2	2	2						4
1	2	I want to learn to ride on major roads	Psychomotor	3	3	2	1	1					5
1	2	[Run Bikeability] During school hours	Affective	4	3	1							3
1	2	Tricks on BMX	Psychomotor	5	5								2
1	2	Call it 'walkability'	Affective	2	2								2
1	2	To learn how to cycle safely	Psychomotor	2									1
1	2	How to go up kerbs safely	Psychomotor	2									1
1	2	[Start Bikeability in] P4	Affective	1									1
1	2	Fix your own bike	Psychomotor	1									1
1	2	Ride on the motorway	Psychomotor										0

Shaded items met decision rules

Appendix 5: Doune PS items generated for Q1

Group	Question	Item	Learning Domain	Score	Score	Score	Score	Score	Score	Score	Score	Score	No. of Responses
2	1	Indications	Psychomotor	4	4	4	4	4	4	3			7
2	1	Emergency/ controlled stop	Psychomotor	5	5	5	5	5					5
2	1	Lifesaver look/ check	Psychomotor	5	5	5	5						4
2	1	M-check [bike safety checks before cycling]	Psychomotor	3	3	3	3	2					5
2	1	How to cycle past junctions	Psychomotor	2	2	2							3
2	1	How to cycle really slowly	Psychomotor	2	2	1							3
2	1	Always check your helmet	Cognitive	1	1	1							3
2	1	How to pull out	Psychomotor	3	3								2
2	1	How to cycle in traffic	Psychomotor	5	3								2
2	1	Feel much safer passing car doors	Affective	4	4								2
2	1	Check before you turn	Psychomotor	4									1
2	1	How to take care of and check your bike	Psychomotor	4									1
2	1	Strong left hand turns	Psychomotor	2	2								2
2	1	The car door might open	Cognitive	2	2								2
2	1	How to signal	Psychomotor	4									1
2	1	U-turns	Psychomotor	3									1
2	1	Cycling with control	Psychomotor	3									1
2	1	Right turn	Psychomotor	1	1								2
2	1	How to cycle in a small area	Psychomotor	1	1								2
2	1	How to go from major to minor roads & back	Cognitive	1									1
2	1	Proud of myself	Affective	1									1
2	1	How to stop	Psychomotor										0

Group	Question	Item	Learning Domain	Score	Score	Score	Score	Score	Score	Score	Score	Score	No. of Responses
2	1	Feel more confident cycling on road	Affective										0
2	1	Ride bike with one hand	Psychomotor										0
2	1	More confident putting hand out to signal to cars	Affective										0
2	1	Can slowly overtake with more control	Psychomotor										0
2	1	Feel proud that can cycle on roads safely	Affective										0
2	1	Bike's distance between self & vehicle in front	Cognitive										0
2	1	How to cycle in line (without crashing)	Psychomotor										0
2	1	Feel confident on major roads	Affective										0
2	1	Don't cycle near kerb	Cognitive										0

Appendix 6: Doune PS items generated for Q2

Group	Question	Item	Learning Domain	Score	Score	Score	Score	Score	Score	Score	Score	Score	No. of Responses
2	2	Cycling around roundabouts	Psychomotor	5	5	5	5	4	4	2			7
2	2	Make the sessions longer (one hour)	Affective	4	4	4	4	4	2	2	2	1	9
2	2	Using fake traffic lights	Psychomotor	5	5	3	3	2					5
2	2	Off road cycling	Psychomotor	5	4	3	1	1					5
2	2	Use road signs	Cognitive	4	3	3	2						4
2	2	Cycling on road in busy town/ city	Psychomotor	5	3	2							3
2	2	Trickier stuff for more confident children on bike	Psychomotor	2	2	1							3
2	2	Cycling on a major road	Psychomotor	5	4								2
2	2	More than once a week (2 times)	Affective	5	3								2
2	2	Practise cycling with road signs	Psychomotor	3	3								2
2	2	Make younger children try	Affective	3	1								2
2	2	Learn about fixing bikes	Psychomotor	1	2								2
2	2	More levels	Affective	1	1								2
2	2	Obstacles	Psychomotor	1	1								2
2	2	Repair chain	Psychomotor										0
2	2	Professional bike teacher to teach Bikeability	Affective										0
2	2	More stuff to do	Affective										0
2	2	Look into things you would do on busy roads	Psychomotor										0
2	2	Gear changing	Psychomotor										0
2	2	Passing ongoing car on road	Psychomotor										0
2	2	Puncture repair	Psychomotor										0

Shaded items met decision rules

Appendix 7: Dunipace PS items generated for Q1

Group	Question	Item	Learning Domain	Score	Score	Score	Score	Score	Score	Score	Score	Score	No. of Responses
3	1	Different positions [primary/ secondary positions]	Psychomotor	5	5	5	4	4					5
3	1	Lifesaver look/ check	Psychomotor	5	5	4	3	3	3				6
3	1	How to handle a junction	Psychomotor	4	3	2	2						4
3	1	Left/ right turns	Psychomotor	4	2	2	1						4
3	1	More confident around cars	Affective	3	3	1	1						4
3	1	Signalling	Psychomotor	2	1	1	1						4
3	1	How to adjust your helmet	Psychomotor	5	3								2
3	1	What side to get off your bike	Psychomotor	4	3								2
3	1	How to interact with traffic	Cognitive	5									1
3	1	Pedal position for starting cycling [up position]	Psychomotor	5									1
3	1	Road safety	Cognitive	5									1
3	1	Signalling to turn	Psychomotor	5									1
3	1	Happy bike [position of bike on ground]	Psychomotor	4									1
3	1	How to take up secondary position in road	Psychomotor	4									1
3	1	Can pass a parked car	Psychomotor	2	2								2
3	1	Emergency stop	Psychomotor	4									1
3	1	How to wear a helmet correctly	Psychomotor	4									1
3	1	Know why primary & secondary are different sides of the road	Cognitive	3									1
3	1	M-check	Psychomotor	2	1								2
3	1	Sing [while cycling]	Psychomotor	2									1

Group	Question	Item	Learning Domain	Score	Score	Score	Score	Score	Score	Score	Score	Score	No. of Responses
3	1	U-turns	Psychomotor	2									1
3	1	How to adjust gears properly	Psychomotor	1									1
3	1	How to cycle on grass	Psychomotor	1									1
3	1	Feel safer cycling on road	Affective	1									1
3	1	Learned to start carefully/ start safe[ly]	Psychomotor										0
3	1	Slowing down	Psychomotor										0
3	1	Safe stop	Psychomotor										0
3	1	Take up a primary position (depending on car)	Psychomotor										0
3	1	How to get on different types of roads	Psychomotor										0
3	1	More confident	Affective										0
3	1	How to cycle with other cyclists	Psychomotor										0
3	1	How to stop properly	Psychomotor										0
3	1	How to get on bike properly	Psychomotor										0
3	1	Feel safer on bike	Affective										0
3	1	Feel more careful	Affective										0
3	1	More confident on road	Affective										0
3	1	Know who has right of way at a junction	Cognitive										0
3	1	How helmet should sit	Cognitive										0
3	1	Wiggle test	Psychomotor										0
3	1	Different bike positions on the road	Psychomotor										0
3	1	How to go from major to minor roads & back	Cognitive										0
3	1	Know what to do when car is behind or in front	Cognitive										0
3	1	Feel safer on bike knowing can check bike	Affective										0
3	1	How to cycle your bike properly	Psychomotor										0

Group	Question	Item	Learning Domain	Score	Score	Score	Score	Score	Score	Score	Score	Score	No. of Responses
3	1	Parts of the bike	Cognitive										0
3	1	Know how to have a 'happy' bike	Cognitive										0
3	1	Enjoyed Bikeability	Affective										0
3	1	How to be safe on bike/ safer cycling	Psychomotor										0

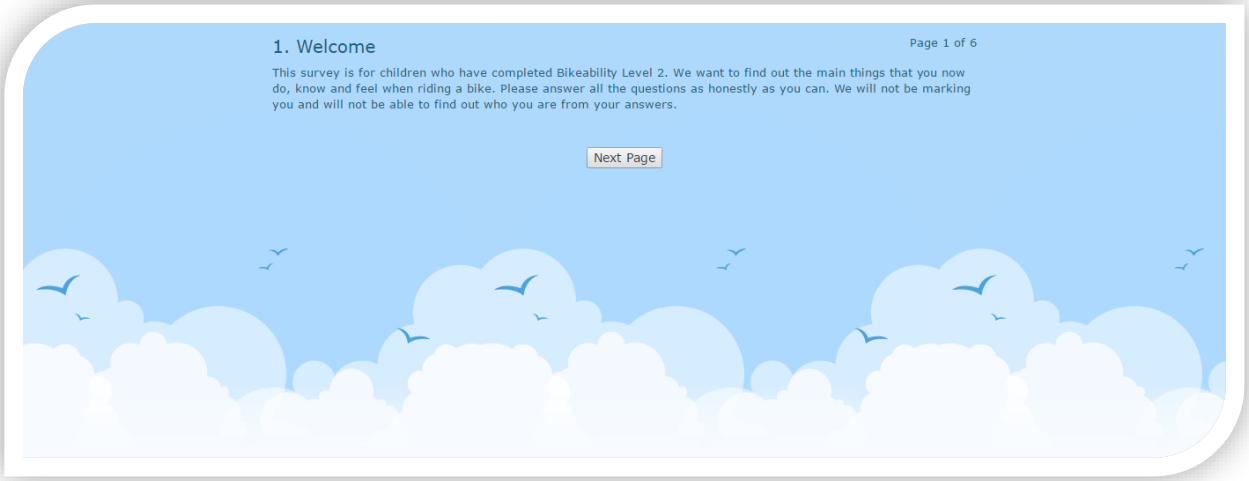
Appendix 8: Dunipace PS items generated for Q2

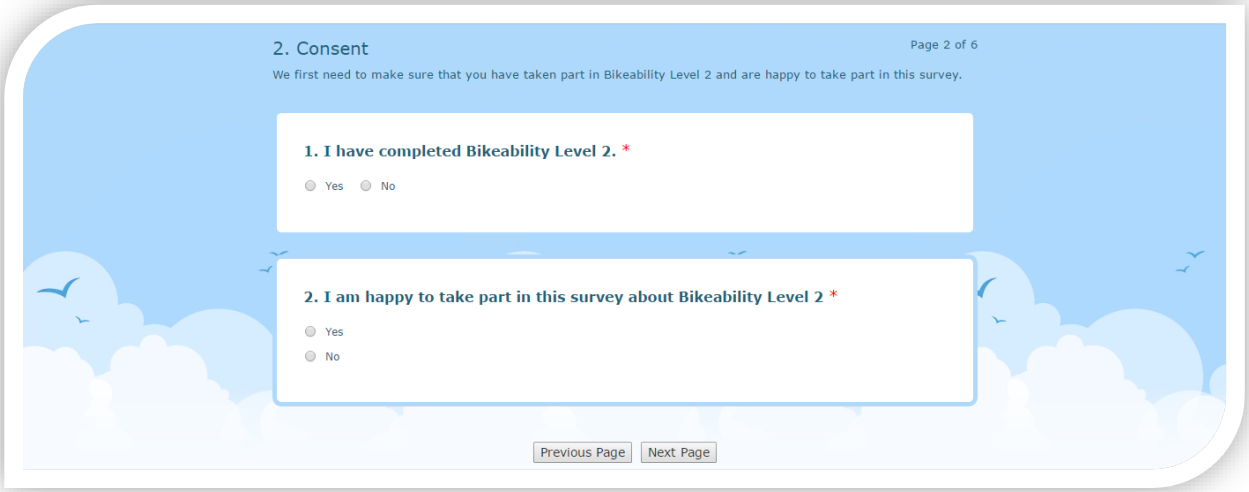
Group	Question	Item	Learning Domain	Score	Score	Score	Score	Score	Score	Score	Score	Score	No. of Responses
3	2	Traffic lights	Psychomotor	5	5	5	5	5	4	1			7
3	2	How to do roundabouts	Psychomotor	5	4	4	4	3	3				6
3	2	Start [Bikeability] in P4	Affective	4	3	3	3	2					5
3	2	[Cycle] on a busy major road	Psychomotor	4	4	4							3
3	2	Cycling in a storm [bad weather conditions]	Psychomotor	5	2	2							3
3	2	Road trip on a public road	Psychomotor	4	2	1	1						4
3	2	How to help younger children	Psychomotor	3	2	1							3
3	2	Overtaking a moving car	Psychomotor	5	5								2
3	2	How to tell cars 'thank you'	Psychomotor	5	1								2
3	2	More games	Affective	3	3								2
3	2	Cycling on ice	Psychomotor	3	2								2
3	2	Learn the same rules as cars [Highway Code]	Cognitive	3	1								2
3	2	How to overtake a parked car	Psychomotor	4									1
3	2	Out on roads more	Psychomotor	2	2								2
3	2	More singing [one of the Bikeability tutor's games]	Affective	2	1								2
3	2	Encourage younger children to get into cycling	Affective	1	1								2
3	2	Cycling in the city	Psychomotor	2									1
3	2	How to start at a traffic light	Psychomotor	1									1
3	2	How to act like a car	Psychomotor										0
3	2	[Learn] why you can't cycle on pavement	Cognitive										0

Group	Question	Item	Learning Domain	Score	Score	Score	Score	Score	Score	Score	Score	Score	No. of Responses
3	2	Start Bikeability at end of P5 with Bikeability 3 at end of P6	Affective										0
3	2	Start Bikeability earlier	Affective										0
3	2	How to cycle on wet roads	Psychomotor										0
3	2	Cycle down a back road/ path	Psychomotor										0
3	2	How to build a bike or fix it without tools	Psychomotor										0
3	2	Cycling in snow	Psychomotor										0
3	2	How to slow down [on] a steep hill	Psychomotor										0
3	2	Cycling in the country	Psychomotor										0
3	2	How to cycle awkwardly/ do tricks	Psychomotor										0
3	2	How to use gears	Psychomotor										0

Shaded items met decision rules

Appendix 9: Bikeability Level 2 survey





In the next few questions we would like to know about what you learned from Bikeability Level 2.

3. Having done Bikeability Level 2, I am now able to: *

	Strongly disagree	Disagree	I'm not sure	Agree	Strongly agree
Do an M-check (safety check before you start cycling)	☐	☐	☐	☐	☐
Signal to other road users	☐	☐	☐	☐	☐
Do a controlled stop	☐	☐	☐	☐	☐
Do an emergency stop	☐	☐	☐	☐	☐
Go to the primary/secondary position on the road	☐	☐	☐	☐	☐
Do a lifesaver check (looking over your shoulder before turning)	☐	☐	☐	☐	☐
Turn left at a junction	☐	☐	☐	☐	☐
Turn right at a junction	☐	☐	☐	☐	☐

Previous Page Next Page

4. Having done Bikeability Level 2, I now know: *

	Strongly disagree	Disagree	I'm not sure	Agree	Strongly agree
I should get off my bike and push it if I don't feel safe	☐	☐	☐	☐	☐
How to interact with traffic	☐	☐	☐	☐	☐
A car door might open	☐	☐	☐	☐	☐
How to check my helmet is fitted correctly	☐	☐	☐	☐	☐
When to use the primary and secondary positions	☐	☐	☐	☐	☐
How to check my bike	☐	☐	☐	☐	☐
How to turn from a major road	☐	☐	☐	☐	☐
How to turn from a minor road	☐	☐	☐	☐	☐

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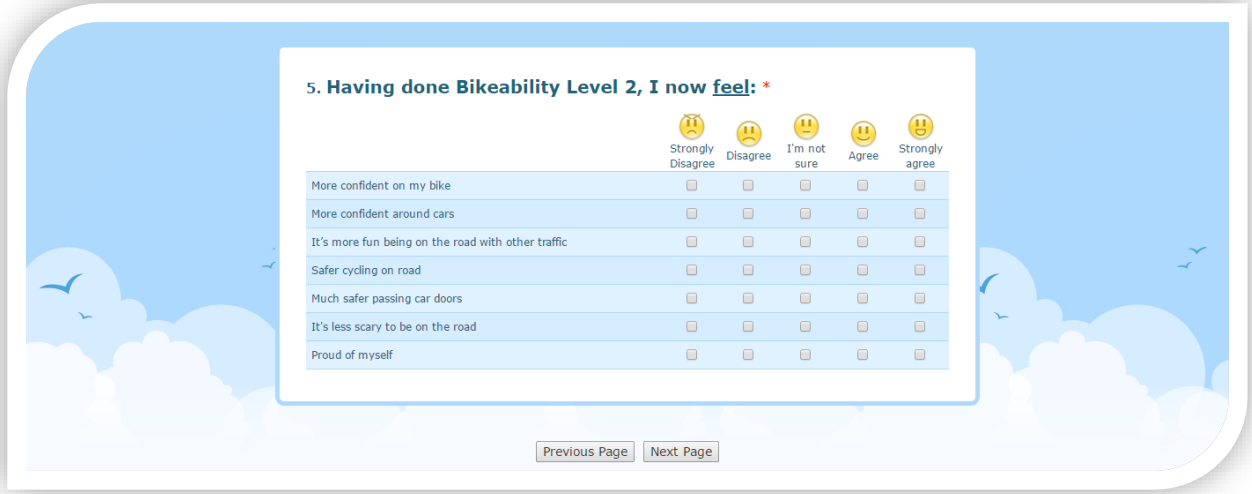
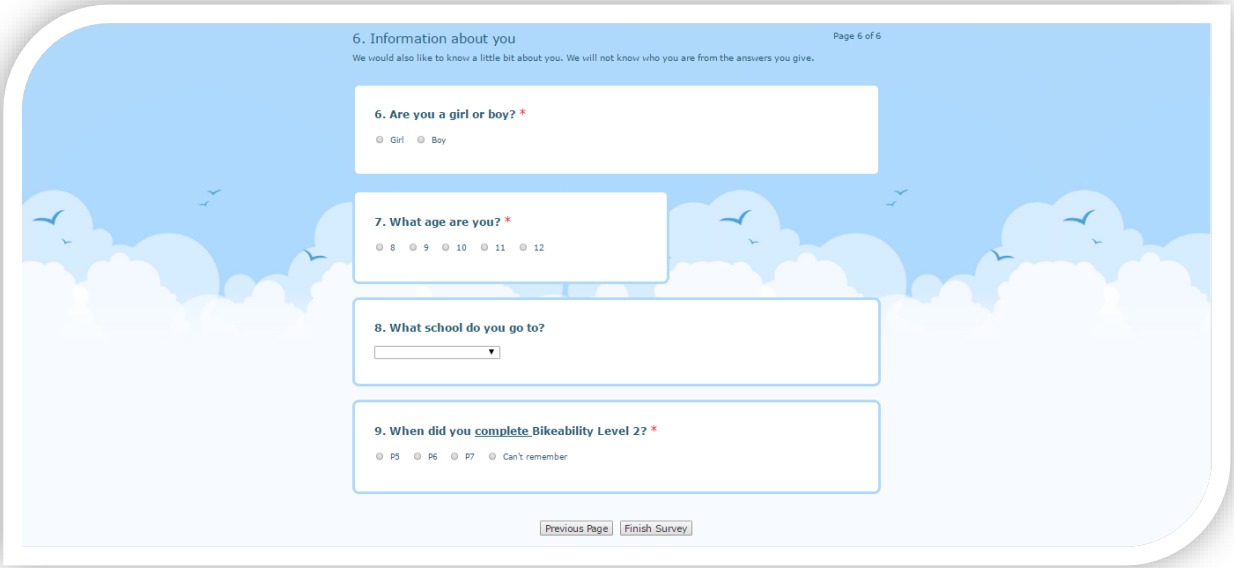
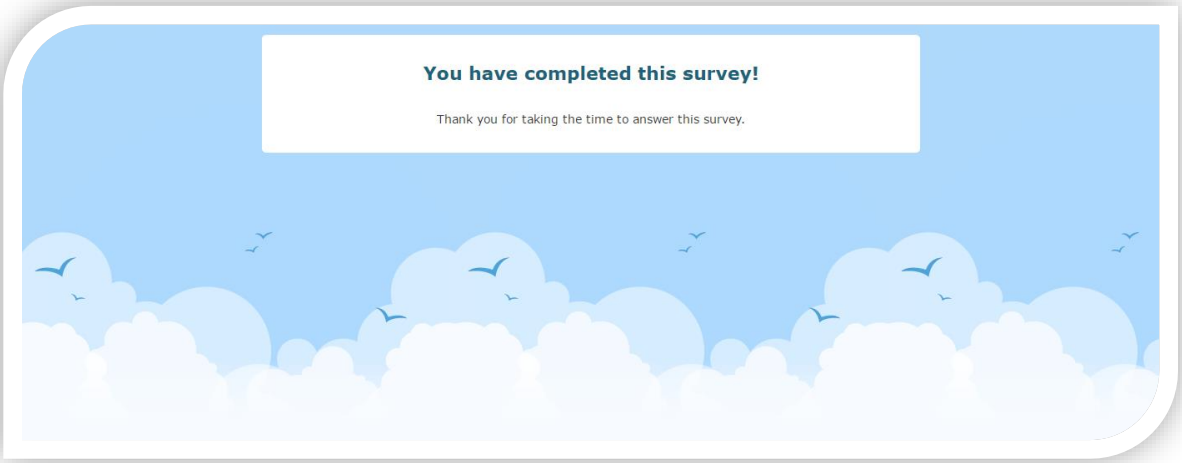

5. Having done Bikeability Level 2, I now feel: *
Strongly Disagree
Disagree
I'm not sure
Agree
Strongly agree
More confident on my bike
More confident around cars
It's more fun being on the road with other traffic
Safer cycling on road
Much safer passing car doors
It's less scary to be on the road
Proud of myself
Previous Page
Next Page


6. Information about you
Page 6 of 6
We would also like to know a little bit about you. We will not know who you are from the answers you give.
6. Are you a girl or boy? *
Girl
Boy
7. What age are you? *
8
9
10
11
12
8. What school do you go to?
9. When did you complete Bikeability Level 2? *
P5
P6
P7
Can't remember
Previous Page
Finish Survey


You have completed this survey!
Thank you for taking the time to answer this survey.

Appendix 10: Invitation letter for primary schools

Dr Larissa Kempenaar
Edukado
272 Bath Street
Glasgow
G2 4JR

20 February 2017

To whom it may concern

We would like to invite the pupils at your school who have completed Bikeability level 2 to complete a brief survey as part of a study to evaluate Bikeability level 2. This study is commissioned by Cycling Scotland, with approval from Stirling and Falkirk Council, and carried out by Edukado Ltd. Edukado is an educational research and consultancy company based in Glasgow.

The aim of this research is to evaluate what pupils have learned from Bikeability level 2 using an online survey. The items in the survey were developed in collaboration with pupils from 3 Primary Schools within Stirling and Falkirk Councils in June 2016. The results of the survey will help us to identify some of the strengths and weaknesses of the Bikeability level 2 programme.

The survey takes only 5-10 minutes to complete and is hosted by SmartSurvey which is compliant with your Council's data protection policies. No identifiable details will be requested in the survey and participation in this project is voluntary for each pupil. Consent to take part is assumed when the online survey is completed.

We would like to request that, if possible, pupils complete this online survey in one of their ICT sessions during school hours. The survey is available using the following link: http://www.smartsurvey.co.uk/s/LJU5H/

Pupils are asked to complete the survey by the **17th of March 2017**.

If you have any further questions about any of the information in this letter, please don't hesitate to contact us: Larissa Kempenaar, Edukado: l.kempenaar@edukado.co.uk.

Many thanks for your cooperation.

Kind regards

Dr Larissa Kempenaar

Director Edukado

Appendix 11: Participating primary schools

Aberfoyle	Allans	Balfron
Bannockburn	Borestone	Braehead
Bridge of Allan	Buchanan	Buchlyvie
Callander	Cambusbarron	Cornton
Cowie	Crianlarich	Deanston
Doune	Drymen	Dunblane
East Plean	Fallin	Fintry
Gargunnock	Gartmore	Killearn
Killin	KincardineinMenteith	Kippen
Newton	OurLadys	PortOfMenteith
Raploch	Riverside	St Margarets, Cowie
St Marys Episcopal	St Marys RC, Bannockburn	St Ninians
Strathblane	Strathyre	Thornhill

Appendix 12: Knowledge obtained during Bikeability Level 2

Having done Bikeability Level 2, I now know:							
Answer Choice		Strongly disagree	Disagree	Not sure	Agree	Strongly agree	Response Total
1	When to get off bike & push it	5	8	24	32	62	131
2	How to interact with traffic	3	1	22	54	50	130
3	When a car door might open	2	4	9	40	74	129
4	Correct helmet fitting	2	2	4	35	86	129
5	Use of primary/secondary positions	2	5	35	42	45	129
6	How to check bike	2	4	9	42	72	129
7	How to turn from major road	3	2	24	50	52	131
8	How to turn from minor road	0	3	20	41	60	124
answered							129
skipped							0

Appendix 13: Skills developed in Bikeability level 2

Having done Bikeability Level 2, I am now able to:							
Answer Choice		Strongly disagree	Disagree	Not sure	Agree	Strongly agree	Response Total
1	Do M-check	2	3	12	50	63	130
2	Signal to other road users	2	0	6	36	86	130
3	Do controlled stop	0	1	4	47	73	125
4	Do emergency stop	2	4	17	46	62	131
5	Go to primary/secondary position	3	4	37	44	42	130
6	Do lifesaver check	2	3	4	35	86	130
7	Turn left at a junction	2	2	10	35	81	130
8	Turn right at a junction	0	1	10	34	80	125
answered							129
skipped							0

Appendix 14: Feelings experienced following completion of Bikeability Level 2

Having done Bikeability Level 2, I now feel:							
Answer Choice		Strongly Disagree	Disagree	Not sure	Agree	Strongly agree	Response Total
1	More confident on bike	5	5	7	28	89	134
2	More confident around cars	6	9	5	44	70	134
3	It's more fun being on road with other traffic	8	14	27	42	43	134
4	Safer cycling on road	8	9	9	43	64	133
5	Much safer passing car doors	6	11	12	46	58	133
6	It's less scary to be on the road	7	10	15	44	57	133
7	Proud of myself	3	5	15	27	83	133
answered							129
skipped							0