

ECO DRAMA



CLIMATE CHALLENGE FUND REPORT (CCF-4732)



MAGIC VAN TOUR 2016-2017 RENFREWSHIRE



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STARTING POINT: MEET ECO DRAMA



Eco Drama are passionate about making quality theatre and creative learning experiences for children and young people which nurture a sense of curiosity, wonder and care for our natural world and remind us we are part of an amazing living planet.

Founded in 2007, we deliver our theatre productions, projects and workshops in schools, theatres, community venues and festivals across Scotland, touring in an electric car and eco van run on recycled waste cooking oil, reducing CO2 emissions by 85%. The company also provide bespoke resource packs to inspire further learning in the classroom and deliver teacher CPD training to ensure a legacy of learning and practical action. To date we have worked with over 60,000 children and young people.

Eco Drama's Magic Van Tour 2016-17 is now our 6th project supported by the Scottish Government's Climate Challenge Fund, to date having reached 365 schools and 47,984 children, young people and teachers across Glasgow, West Dunbartonshire and Renfrewshire with our creative learning, carbon reduction work.

Our project supports schools that are looking to develop their Sustainable Development Education curriculum through creative learning experiences. As theatre-makers and creative learning practitioners, we explore fresh ways in which nature connection work is designed and delivered, using our skills to create imaginative learning experiences that engage both hearts and minds, and inspire practical action.

This year we have been passing on lore of Scotland's forgotten apple heritage, exciting children and young people about the wonderful world of worms and training up a new generation of recycling heroes. We have been planting orchards in schools with Scottish heritage fruit trees, composting food waste to feed the worms, planting vegetable seeds in raised beds, and inspiring minds with new fuel technologies. We have been collaborating, learning, celebrating and reflecting on the significance of creative environmental education and learning.

We have been telling hopeful stories that contain the seed of a better future. Striving to inspire children, young people, teachers and wider communities that what they do as an individual, and as a community, does matter. That every small change or action counts towards preserving our amazing natural world.

This Final Report encapsulates our 2016-17 journey with the collaborating school communities across Renfrewshire, with whom we thank for all of their hard work.

It seems fitting to highlight one participant's words at the end of taking part in The Forgotten Orchard production: *"You only need some seeds, water and somewhere to put it and you can make a tree."* Pupil, Todholm Primary School

We hope you enjoy, and gain inspiration, from reading this Final Report.

Eco Drama, March 23rd 2017



HEADLINE ACHIEVEMENTS

In 2016-2017, Eco Drama:



REACHED
10592
PARTICIPANTS



Toured 3
productions and
1 workshop

Delivered 2 CPD
training Sessions

Gave out 840
packets of seeds

Gave out 101
resource packs

Planted 45
Scottish heritage
apple trees in
Renfrewshire

Gave out 23
wormeries with
11,500 worms

Employed 8
freelance creative
staff

Employed full-
time Artistic
Director and
General Manager

Reduced CO_{2e}
emissions by
102.55 tCO_{2e}

Delivered 222
performances
and workshops

Employed 1 part-
time Schools
Coordinator

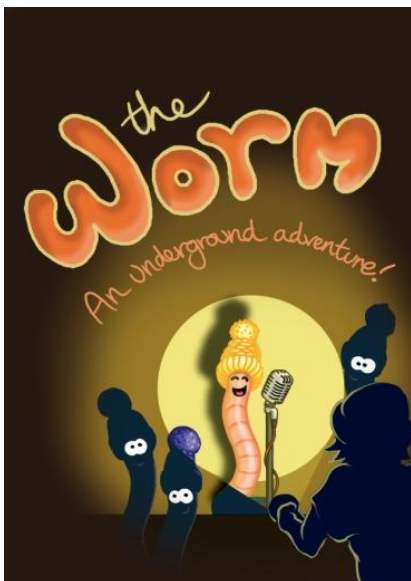
Won Glasgow
City Council
Environmental
Initiative Award

PROJECT ACTIVITIES

Eco Drama delivered its 2016-17 tour to schools across Renfrewshire in an electric car and eco van run on recycled waste vegetable oil, reducing CO2e emissions by 85%. The electric car and bio diesel van also served as educational features, engaging children and young people with alternative modes of transport, and demonstrating Eco Drama to be positive green role models.



Our Climate Challenge Fund project 2016-17 involved touring the following 4 productions and workshops to primary schools across Renfrewshire:



The Worm - An Underground Adventure

Theatre Production for Nursery and P1, P2, & P3.

Explores the life of worms, composting, growing in creative containers and gives pupils the opportunity to explore a working wormery.

Comes with Classroom Activity Pack, 3 packets of seeds, wormery, worms, kitchen caddy and sticker, and wormery care guidance sheet.

The Worm Inspectors



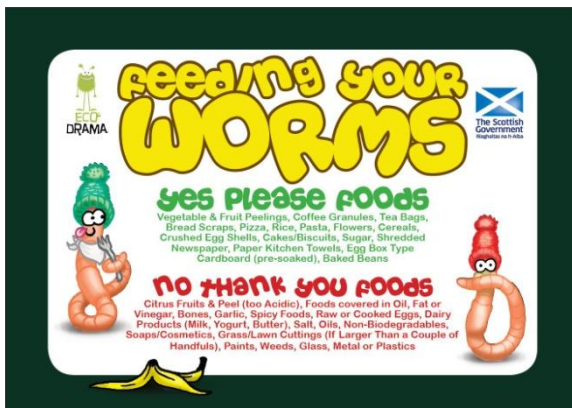
Interactive Theatre Production for P3, P4, P5, P6, & P7.

The Worm Inspectors helps learners to understand the life of a worm, the value of food waste and how to create a worm's ideal menu.

Comes with Classroom Activity Pack, 3 packets of seeds, kitchen caddy and sticker, wormery care guidance sheet, lunchtime interaction with the Worm Inspectors, and the opportunity for pupils to set-up the wormery with the Worm Inspectors.



Selection of resources for The Worm – An Underground Adventure and The Worm Inspectors



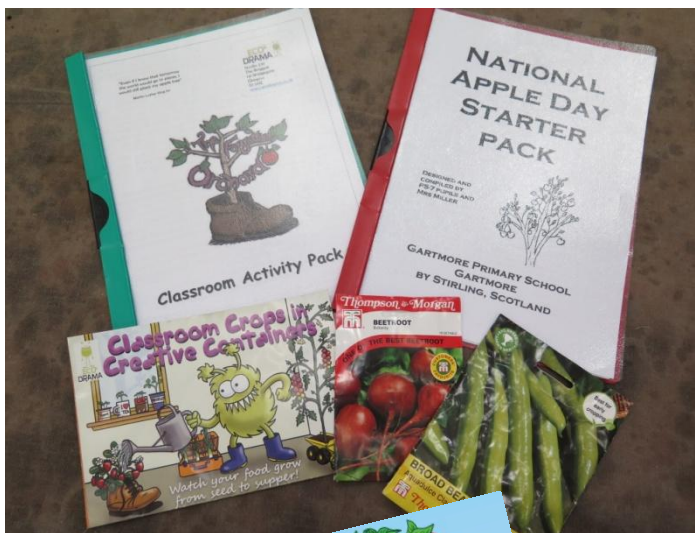


The Forgotten Orchard

Theatre Production for P3, P4, P5, & P6.

A show dedicated to apples, a food with a truly fascinating history, as seen through the eyes of Katy and her Grandad. Pupils explore complex ideas such as food miles, cross pollination, and horticulture.

Comes with 2 different Classroom Activity Packs, 3 packets of seeds, 3 Scottish Heritage Apple Trees and the opportunity for teachers to attend an exclusive CPD Training Session led by [*The Appletreeman*](#) to learn how to plan, plant, and care for their school orchard.



*Selection of resources for
The Forgotten Orchard*

RECYCLING HEROES



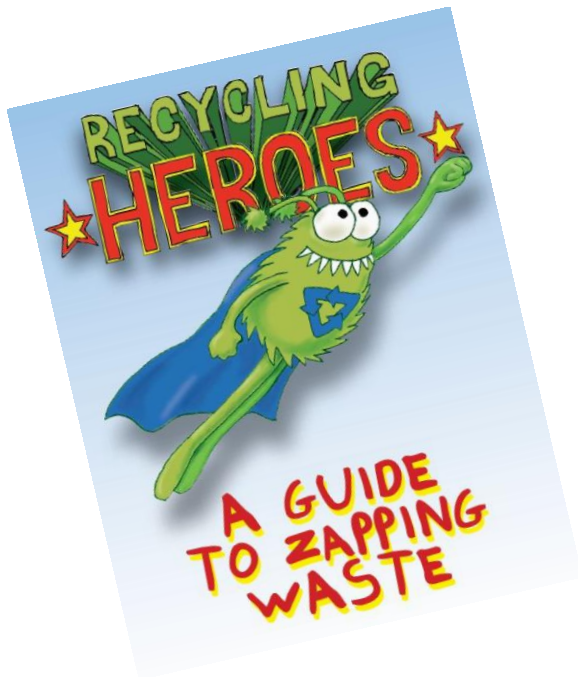
Recycling Heroes

Interactive Workshop for Nursery, P1, P2, P3, P4, & P5.

Focussed on the principles of Reduce, Reuse and Recycle, this fun and informative workshop encourages learners to find their inner recycling superhero.

Comes with Classroom Activity Pack, Cotton Canvas Bag, Pin Badge, Recycling Booklet, and carbon quiz.

Selection of resources for Recycling Heroes



ACTIVITIES GRID

As per the Climate Challenge Fund (CCF) Report Guidelines, we have included the activity grid below detailing all activity delivered by Eco Drama as a result of CCF funding.

Activity	No.
How many advice/information centres – regular drop-in centre, advice surgery etc. - is your project running?	N/A
How many training sessions where skills and/or information were passed on – e.g. composting training, cooking workshops, etc. – has your project has held.	2
How many events did your project hold, e.g. information fairs, open days, etc.? Do not include events held by other organisations which you have attended.	222
How many staff, volunteers or community members have achieved qualifications through the project – e.g. City & Guilds Energy Awareness, Trail Cycle Leader, etc.	N/A
How many people were directly employed by your project. Tell us the full-time equivalent (FTE) number of employees (e.g. 3 days per week = 0.6 FTE).	2.6 FTE
Is the project supporting the development of any long-term jobs which are not dependent of CCF Funding? How many?	1
How many people are actively involved in your project – attending groups & workshops, using the project facilities etc.?	10,592
How many people volunteer their time and energy to keeping the project going – don't forget the members of your management committee or board.	4
How many schools are involved in your project?	27
How many community-owned buildings have been refurbished?	N/A

How many Home Energy Checks or similar energy efficiency reports have been carried out by your project?	N/A
How many households have been referred on to other agencies or providers (e.g. HES, Green Deal assessor) for further action?	N/A
How many households installed energy efficiency measures – loft, wall or floor insulation, draft-proofing, double glazing etc. – as a result of your project?	N/A
How many households installed green energy generation measures – photovoltaic panels, solar thermal panels, air or ground source heat pumps, wood fuelled heating systems etc – as a result of your project?	N/A
How many miles of car journeys have been reduced through the activities of your project?	See Bio Diesel section P47
How many square metres (m ²) of community growing space (allotments, poly-tunnels, raised beds, community gardens) has your project brought into use?	295m ²
How many tonnes of waste have been diverted from landfill because of the activities of your project?	294.6 tonnes
How many kWh of energy has been reduced because of the activities of your project?	N/A

CLIMATE CHALLENGE FUND (CCF) OUTCOMES SUMMARY

Outcome	Result
<p><u>CO₂e Outcome 1</u> Reduce 20 school communities' emissions by 77.5656 tonnes CO₂e through reducing food waste going to landfill by 20%.</p>	<p>23 school communities' emissions reduced by 44.53 tonnes CO₂e by diverting 590.43kg of food waste from landfill.*</p> <ul style="list-style-type: none"> ✓ 96 performances of The Worm – An Underground Adventure and The Worm Inspectors to 5655 pupils, and 199 teachers. ✓ 23 wormeries, 23 kitchen caddies and stickers, and 11,500 worms given out. ✓ 50 resource packs with seeds, information sheets, posters, and classroom activity packs distributed. <p><small>*Note: CO₂e figure is hard data derived over 26 weeks as opposed to original application target of 52 weeks hence why it is lower than target figure. See Appendix 1 for full details.</small></p>
<p><u>CO₂e Outcome 2</u> Plant 15 school orchards and inspire further growing in raised beds/creative containers that will produce 300 Kg of food, reducing carbon emissions by 1.056 tonnes CO₂.</p>	<p>10 school orchards planted + 25 schools growing a variety of edible crops in raised beds, pots and creative containers for harvest in May-Dec 2017. 295m² of community growing space brought into use.</p> <p>Speculative figure of 2,612.4kg food will be produced, reducing emissions by 9.2 tCO₂e.</p> <ul style="list-style-type: none"> ✓ 40 performances of The Forgotten Orchard to 2219 pupils and 80 teachers. ✓ 2 Orchard CPD Training Sessions to 15 teachers from 10 schools. ✓ 840 packets of seeds provided to schools for pupils and teachers to plant. ✓ 45 Scottish heritage apple trees planted by pupils across Renfrewshire. ✓ 21 classroom activity packs, seeds, posters distributed.

CO2e Outcome 3

Of 2,250 pupils, increase the number actively partaking in the principles of Reduce, Reuse, Recycle at school and at home and divert 50% of their waste from going to landfill, reducing carbon emissions by 112.5 tonnes CO2e.

Of 2,280 participating pupils, a 'before and after' comparison was taken and we established a new baseline of **1,391** pupils whose behavior could be changed. 70% of these pupils showed positive recycling behavior change with **980** pupils now diverting a further 50% of their recyclable waste from landfill. 300kg per pupil has been saved, diverting **294,000kg** of waste in total, and reducing carbon emissions by **49 tonnes CO2e**.

- ✓ **86** Recycling Heroes Workshops delivered to **2,280** pupils and **96** teachers.
- ✓ **2280** Recycling Heroes Canvas Bags, badges, and recycling booklets distributed.
- ✓ **30** Recycling Heroes activity packs distributed.

Community Outcome 4

Of 13,450 pupils, increase educational attainment by improving & measuring changes in Knowledge & Understanding, Attitudes & Values, Enjoyment, inspiration, Creativity, Skills & Activity, Behaviour & Progression in relation to their learning for sustainability.

10,154 pupils participated in an Eco Drama workshop or production throughout 2016-2017.

Of pupil respondents, between **66%** to **98%** displayed increased educational attainment in relation to their learning for sustainability.

Community Outcome 5

15 schools will have improved bio diversity and new community green spaces with the planting of the orchards. Local awareness and engagement in a low carbon future may also be increased.

25 schools have improved bio diversity and new green spaces with **10** planting orchards and **25** planting edible crops.

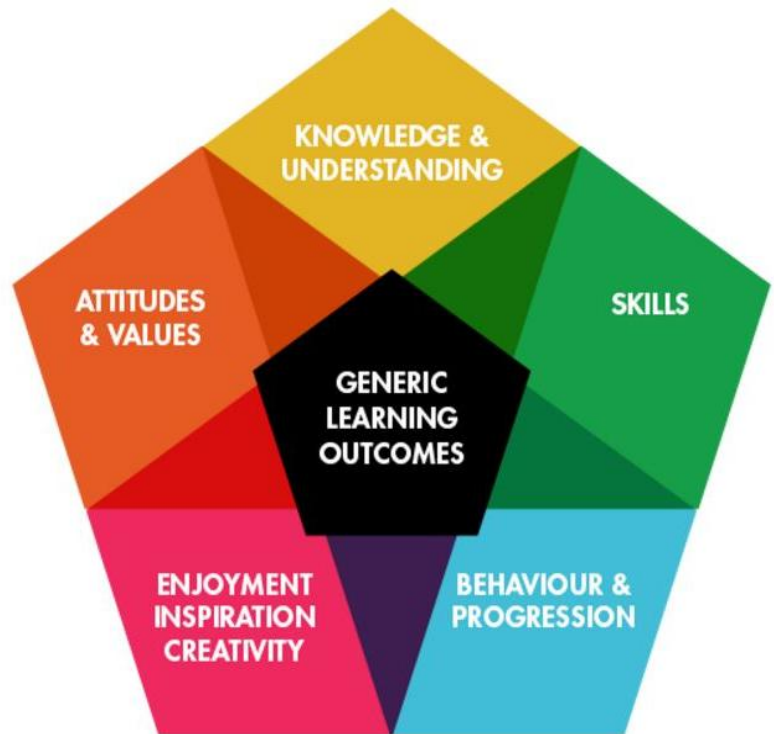
At least **44%** of schools have engaged parents with Eco Drama work increasing local awareness in a low carbon future.

OUR EVALUATION PROCESS AND METHODS

Eco Drama utilise the **Inspiring Learning Framework** originally devised by the Museums, Libraries & Archives Council (2008) to evaluate our work.

Arts Council England now feature this as “a key improvement framework for the arts and culture sector” (Arts Council England)

This framework identifies five **Generic Learning Outcomes (GLO)** detailed in the diagram opposite and recommends using these to measure the impact of a project on participants.



*Generic Learning Outcomes Diagrammatic View
(Arts Council England)*

For each workshop or production, Eco Drama identify up to 5 **Specific Generic Learning Outcomes (SGLO)** within each GLO and gather data to assess the fulfilment of the SGLO. Our SGLO for each workshop or production are listed in Appendix 2.

We have also measured the fulfilment of the **5 Climate Challenge Fund Outcomes** using detailed indicators and specific evaluation gathering methods as detailed in Appendix 3.

THE DATA

Eco Drama has obtained **primary data**, both qualitative and quantitative, through the use of:

Questionnaires and Surveys (completed by teaching staff and pupils)

Carbon Quizzes (completed by pupils)

Pictorial drawings (completed by pupils)

Informal phone interviews (conducted by the Schools Coordinator (SC) with teaching staff)

In person meetings and discussion (conducted by the SC and Artistic Director (AD) with teaching staff)

Case Study (prepared by the SC and AD, completed by teaching staff and pupils)

Social Media (published by teaching staff and parents at schools)

Emails (sent by teaching staff to SC)

Competitions (distributed to teaching staff and pupils)

A full set of evaluation materials can be found in Appendix 4.

Eco Drama has utilised **quantitative secondary data** to calculate CO₂ reductions where schools have been unable to return accurate figures such as weight of produce grown, weight of materials recycled, and the weight of food scraps composted. Where this data has been used is cited throughout and we believe acts as a robust reporting measure within a primary school environment.

Additionally, throughout this report we have included highlights from our case study of Langbank Primary School providing a detailed view across the academic year of their work with Eco Drama. We believe the activity carried out by Langbank Primary School to be broadly representative of activity in all 27 primary schools we have worked with across Renfrewshire.

CCF OUTCOME 1

CO2e Outcome 1

Reduce 20 school communities' emissions by 77.5656 tonnes CO2e through reducing food waste going to landfill by 20%.

Result

23 school communities' emissions reduced by **44.53 tonnes CO2e** by diverting **590.43kg** of food waste from landfill.

We exceeded this outcome by working with more schools and beneficiaries than originally planned but partially met the CO2Ee Outcome. See Appendix 1 and Learning & Reflection section for explanation.

5655 pupils and **199** teachers watched **96** performances of The Worm – an Underground Adventure and The Worm Inspectors. These schools are now looking after **23** wormeries and over **11,500** worms, recycling food scraps, and preparing compost to nourish their free edible crop seeds distributed by Eco Drama.



Photographs from Inchinnan Primary School's visit from the Worm Inspectors

63% of classes have been involved with looking after the wormery and collecting food scraps. Of the remaining **37%**, a further **25%** had plans to liaise with the classes responsible for the wormery in the near future to allow their children to experience creating their own compost and caring for the worms.



We can therefore estimate that **88% of pupils** will have developed an understanding of and skills in maintaining a wormery and recycling food scraps.



“Our Primary 6 class has loved using the wormery. They are using the recycling from the food bins in the dinner hall to top up the food for the worms. They are really enjoying the responsibility of caring for the worms and are excited to make use of the compost.”

Craig McCrorie, Depute Head Teacher, Heriot Primary School

To further learning in the classroom both before and after a visit, teachers receive a bespoke resource pack which includes a Classroom Activity Pack tailored to the educational outcomes of each show.

37% of teachers told us that *The Worm – An Underground Adventure* Classroom Activity pack was useful and the remaining **63%** said they hadn't used it yet but were planning to. **18%** of teachers told us that *The Worm Inspectors* Classroom Activity Pack was useful, with a further **59%** not having used it yet but with plans to do so.



Case Study: Langbank Primary School

Langbank Primary was a case study primary school for Eco Drama's Climate Challenge Fund project throughout 2016-17. Langbank Worm Inspectors Aidan, James, Ewan, Lewis, and Cameron introduce us to their experience as Worm Inspectors!

"Every Friday, the Worm Inspectors look at how much food they have got. They have not been weighing the food as what they give the worms is dependent on how much the worms have eaten the previous week. Generally, the [Kitchen Caddy] is $\frac{3}{4}$ full on a Friday"

Some of the worms died over the winter and appeared in the liquid waste. However, there are still a lot of worms in the wormery that are active."



Worm Inspector Notes

The food appears rotten on the surface. It usually looks damp and sometimes there are ice particles on the soil. Sometimes the lid blows off and the inspectors have to put it back on. **Big hint. Make sure the worms are regularly checked on. Drain the "Worm pee" on a regular basis.**

We have not been keeping diary of how much weight of food has been recycled but will consider doing that next year!



Worm Inspector James said "It is fun and like looking after a thousand pets."

Worm Inspector Ewan said "It is very good learning how worms live and a great responsibility".

"Pupils have been actively encouraged to dispose of waste in the wormery. Pupils have been encouraged to respect an awareness of the natural environment."
Teacher from Langbank Primary School



"All pupils were actively engaged in learning all about the life of the worm, the value of food waste and what worms eat. The children enjoyed the game "Feed the giant worm" and understood the value of disposing of food waste in the wormery."

Teacher from
Langbank
Primary School



"The show was child friendly and very educational. The children in Primary 1 thoroughly enjoyed the show and could recall facts about worms afterwards. The hands on part of the show where children were given the opportunity to experience a real wormery was excellent."

Teacher from
Our Lady of
Peace Primary
School

"The wormery is being used by children in upper school however our children were so motivated to learn about worms we went on a worm hunt, collected worms, measured them and made DIY [wormery] so the children could observe them." Teacher from Houston Primary School

CCF OUTCOME 2

<p><u>CO2e Outcome 2</u> Plant 15 school orchards & inspire further growing in raised beds/creative containers that will produce 300 Kg of food, reducing carbon emissions by 1.056 tonnes CO₂.</p>	<p><u>Result</u> 10 school orchards planted + 25 schools growing a variety of edible crops in raised beds, pots & creative containers for harvest in May-Dec 2017. 295m² of community growing space brought into use. Speculative figure of 2,612.4kg food produced, reducing emissions by 9.2tCO₂e.</p>
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We exceeded this outcome as although only 10 schools across Renfrewshire planted a school orchard, each school received **5** Scottish heritage apple trees instead of 3, so the same amount of fruit trees were still planted (**45**). In addition, **25** schools were inspired to plant edible crops using **840 seed packets** given out by Eco Drama, an increased amount to original plans. **40** performances of The Forgotten Orchard were performed to **2219** pupils and **80** teachers plus 2 Orchard CPD Training Sessions to 15 teachers from 10 schools, inspiring audiences to grow their own food. See Appendix 1 for full details on carbon calculations.

33% of classes have planted the free edible crop seeds given out by Eco Drama. Of the **67%** who hadn't planted seeds yet, **44%** had plans for planting in the better weather. From this, we can assume that at least **77%** of the seeds given out will be planted by the end of March 2017.

When asked how their seeds were progressing, teachers told us:

"[The seeds] have been planted indoors in our tuff tray but have yet to sprout."
Teacher from Houston Primary school

"[The seeds] are growing well, we have had a weekly garden session over the winter and will increase our garden work through the spring into summer"
Teacher from St Fillan's Primary School

"We will action this [seed planting] as soon as the weather permits!"
Teacher from Mossvale Primary School

Arkleston
Primary School
Apple Planting
Day



*Drawing by pupil from
Barsail Primary School*



“Over the past few days members of our Eco Committee as well as Miss McNeil and Miss Lynch have been very busy in our gardens. Thanks to a course attended by Miss McNeil and Miss Lynch and run by ‘The Apple Tree Man’ we were gifted 5 apple trees. These lovely trees have been planted around our playground by members of our Eco Committee and will start to bear fruit in 1 to 2 years. We are very thankful for these trees and very much looking forward to making delicious things with our very own, home-grown apples!”



These quotes and photographs are taken from GLOW blogs and twitter posts.

A full list of GLOW blogs can be found in Appendix 5.

10 schools planted 45 Scottish heritage apple trees throughout January and February 2017.

We asked teachers to tell us about their Orchard Day planting plans. Their responses highlight the involvement of the whole school and the local community in inspiring the growing of edible fruit and vegetables:

"The gardeners from the eco group will plant the trees and will follow up with a whole school presentation."

"Our orchard planting day will take place on Wednesday 1st Feb which is a vertical learning day for the children. I will be responsible for planting the trees with our eco committee. I am hoping that one of our parents will assist".

"Tree planting will take place wk beginning 30/1 and will involve our Eco Committee. We are also trying to involve the local news paper."

"My plans will be sharing my experience today with the children, explaining where is best to plant, giving children specific jobs in helping to plant and sharing how important it is to protect our tree."



Each teacher received a bespoke resource pack accompanying *The Forgotten Orchard* performance. This included 2 Classroom Activity Packs, seeds and a poster.

54% found *The Forgotten Orchard* Classroom Activity Pack useful, and a further **46%** told us that they hadn't used it yet but had plans to do so. One teacher told us:

"We carried out the pre-performance activities, this was really useful as some of the children did not know what an orchard was, and it really opened their eyes to how far some food travels to reach us. These activities were very useful [in] aiding their understanding of the concepts explored in the drama."

Teacher from St Fillan's Primary School

Dear Julie,
we recently had the 'Forgotten Orchard' ev drama at our school (Tues 11/1/16).

Firstly, may I express my delight at the quality of the performance and the valuable lesson the drama was seeking to convey to the audience.

Secondly, I thought you may be interested in the attached photocopy from the homework spelling jötter of one of my primary four pupils. A week later, when tasked with writing a sentence to go with his spelling words for that night, the performance and message had clearly been communicated in a way which proved inspirational - well done ev drama!

Success!
Thank you again for your programme and performance.

Yours sincerely,
Philip Lardner
Class Teacher P3/4.

Monday 7th November 2016

bee bee bee bee ✓
see see see see ✓
tree tree tree tree ✓
need need need need ✓
seed seed seed seed ✓
sea sea sea sea ✓
✓ seen seen seen seen ✓

A man came in to the school to talk about apples and he inspired me to plant an apple seed out my back door. ✓ brilliant idea!
well done!

"A man came in to the school to talk about apples and he inspired me to plant an apple seed out my back door."

"It raised awareness of food miles and how they can affect the environment depending on how far the food has travelled."

Teacher,
Langbank
Primary School

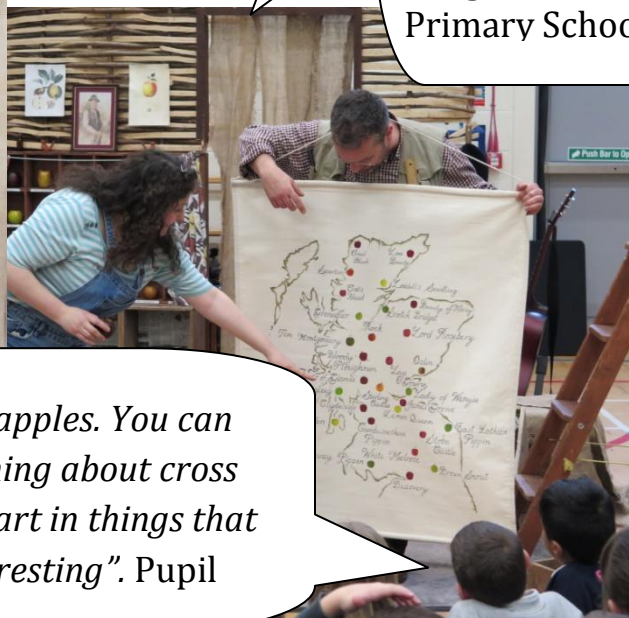
"This was an excellent show. The children and adults were completely captivated by it. The standard of acting, music and relevance was fantastic. This was an exceptional way of communicating the importance of apples in our lives but more importantly it was about passion and love for nature and our relationship with it. Thank you for coming to our school, we were all very impressed and grateful."

Simon Cundy, Langbank PS



"The children were very positive about the Orchard Drama and were very motivated about taking planting of trees forward. They are looking forward to getting an orchard for the school."

Teacher from
Langbank
Primary School



"There are 200 hundred different Scottish apples. You can grow plants almost anywhere. I liked learning about cross pollination. It is important that you take part in things that the elderly do because it could be very interesting". Pupil



Case Study: Langbank Primary School

Langbank Primary School embarked on a project to renovate their garden in 2016/2017. This included establishing raised beds for vegetables, wild flower patches for bees, and their own school orchard. Eco Drama provided 5 apple trees, 1 plum tree, autumn fruiting raspberries and lots of broad bean seeds and beetroot seeds to support teachers and pupils in growing food to use in the school canteen.

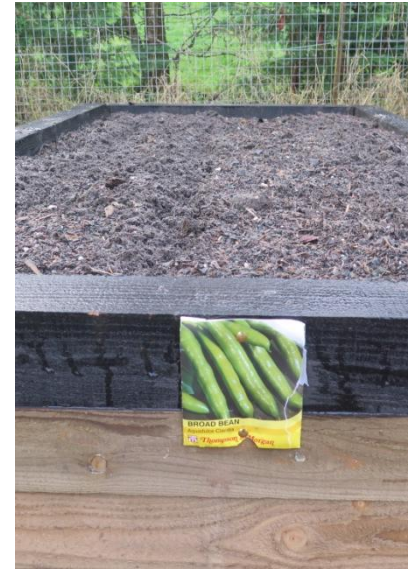
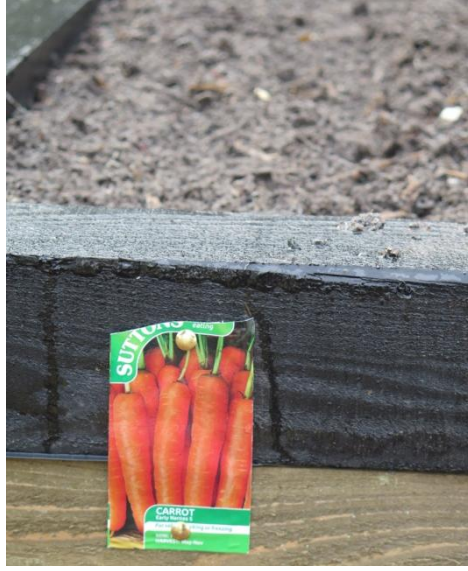
Each class has kept a planting diary (complete diaries can be found in Appendix 6). In this section, we share P6/7's planting diary and photographs on the next page:

In January our garden was finished being built. We went out with the head teacher and we [planted] Carrots, Cabbages, Radishes and some flowers. We also added soil to two old flower beds and extended a garden path using bark chippings.

Iona said: "I really enjoyed doing the planting as it made the garden feel more homely. I love the idea of growing vegetables and making them into soup"

Lucy said: "I enjoyed the planting and can't wait to see them when they have grown"

We planted some broad beans in class and they are starting to grow. We transplanted them into larger pots. Nothing is yet growing in the garden though, the weather has been too cold.



Langbank Primary School's Raised Vegetable Beds



January - sowing broad beans



February - sprouting and transplanting

CCF OUTCOME 3

CO2e Outcome 3

Of 2,250 pupils, increase the number actively partaking in the principles of Reduce, Reuse, Recycle at school and at home and divert 50% of their waste from going to landfill, reducing carbon emissions by 112.5 tCO2e.

Result

Of 2,280 participating pupils, a 'before and after' comparison was taken and we established a new baseline of **1,391** pupils whose behavior could be changed. 70% of these pupils showed positive recycling behavior change with **980** pupils now diverting a further 50% of their recyclable waste from landfill. 300kg per pupil has been saved, diverting **294,000kg** of waste in total, reducing emissions by **49 tCO2e**.

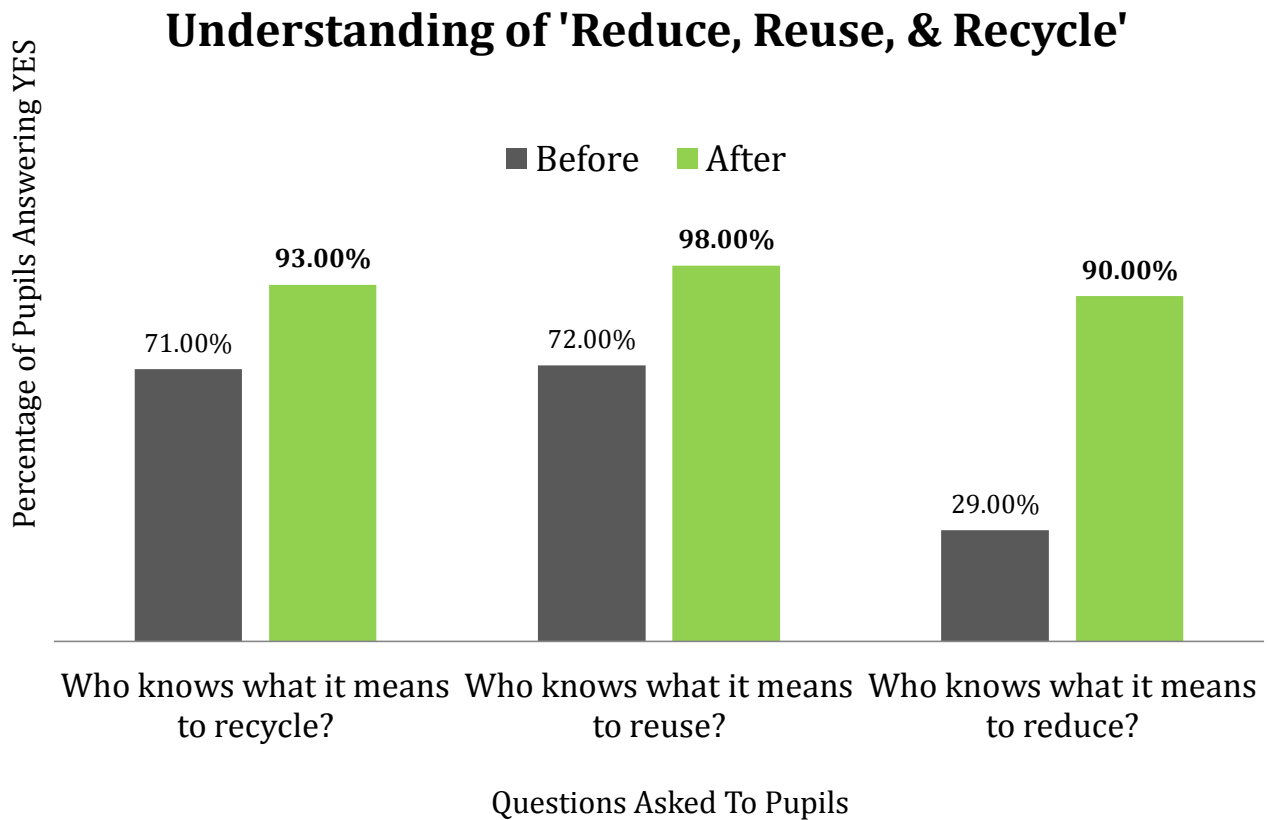
We exceeded this outcome with **2,280 pupils and 96 teachers** joining Bag Girl to banish the evil Rubbish Monsters and find their inner Recycling Super Hero! Each pupil received a Recycling Heroes pin badge, a cartoon information booklet, and a cotton canvas bag to continue learning at home and in class.

Teachers received a Classroom Activity Pack filled with activities to complete with children before and after the workshop. **50% of teachers** found the pack useful with a further **50%** not having used it yet but with plans to do so. One teacher told us:

"The game where children got into teams to sort the recycling objects was great and we are going to re-enact that soon when we have collected enough items. We are doing "Recycling" as a mini-topic in our class now - inspired by your visit. The children are bringing in empty cereal boxes, kitchen roll tubes etc. to be re-used for our other Dinosaur topic. They are very good at finding other uses for things instead of throwing them out." Teacher from Our Lady of Peace Primary School



Pupils completed a 'Carbon Quiz' before, and two weeks after, each Recycling Heroes Workshop. Due to the workshops taking place throughout January-March 2017 towards the end of our project – we naturally received less returned data from schools. In this section, we have broken down the results of the Carbon Quiz which clearly demonstrate strong changes in recycling behavior and attitude.



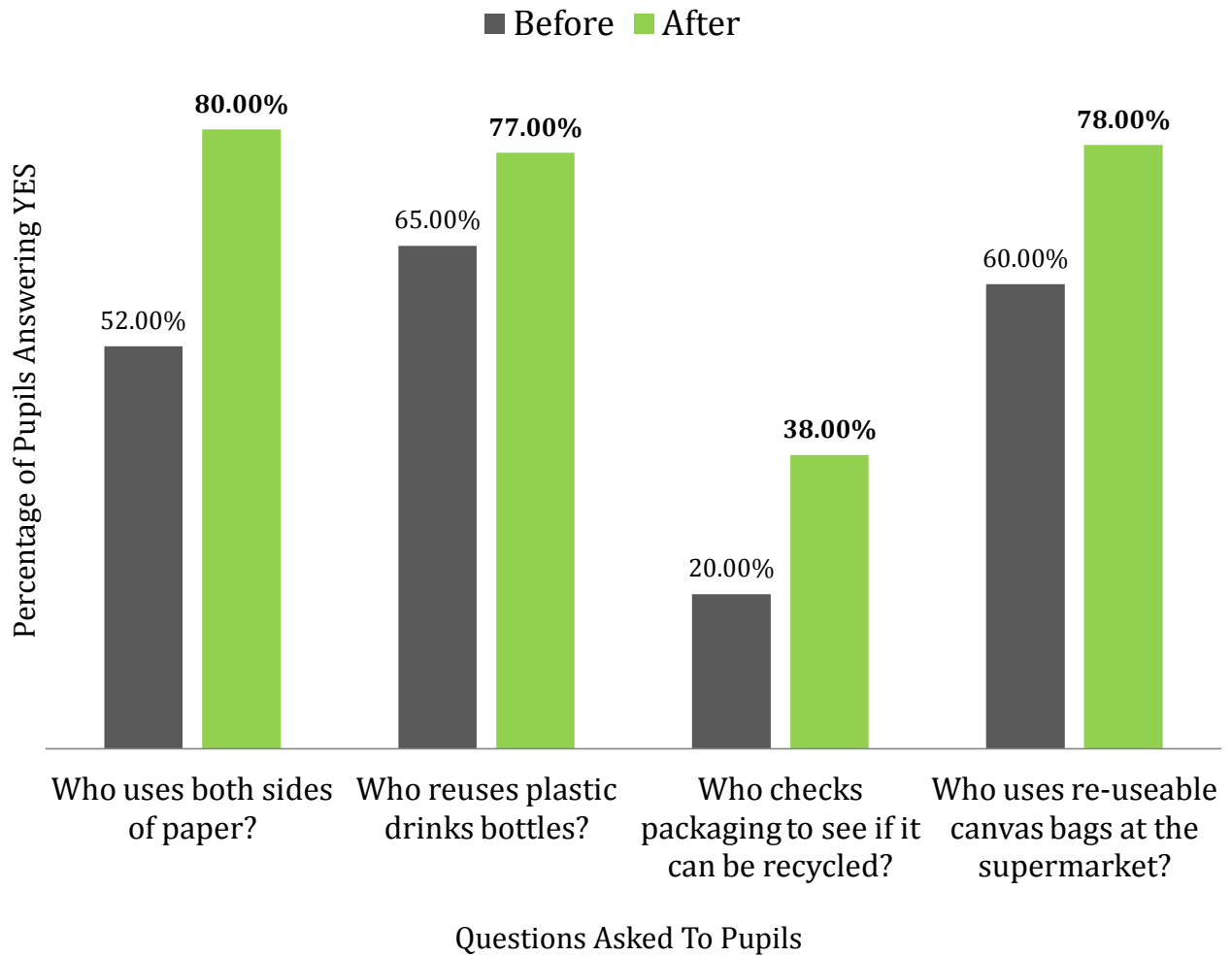
KEY OBSERVATIONS

61% increase in pupil understanding of reducing waste

26% increase in pupil understanding of reusing materials

22% increase in pupil understanding of recycling materials

Changes in Recycling Behaviour



KEY OBSERVATIONS

28% increase in pupils using both sides of paper

12% increase in pupils reusing drinks bottles

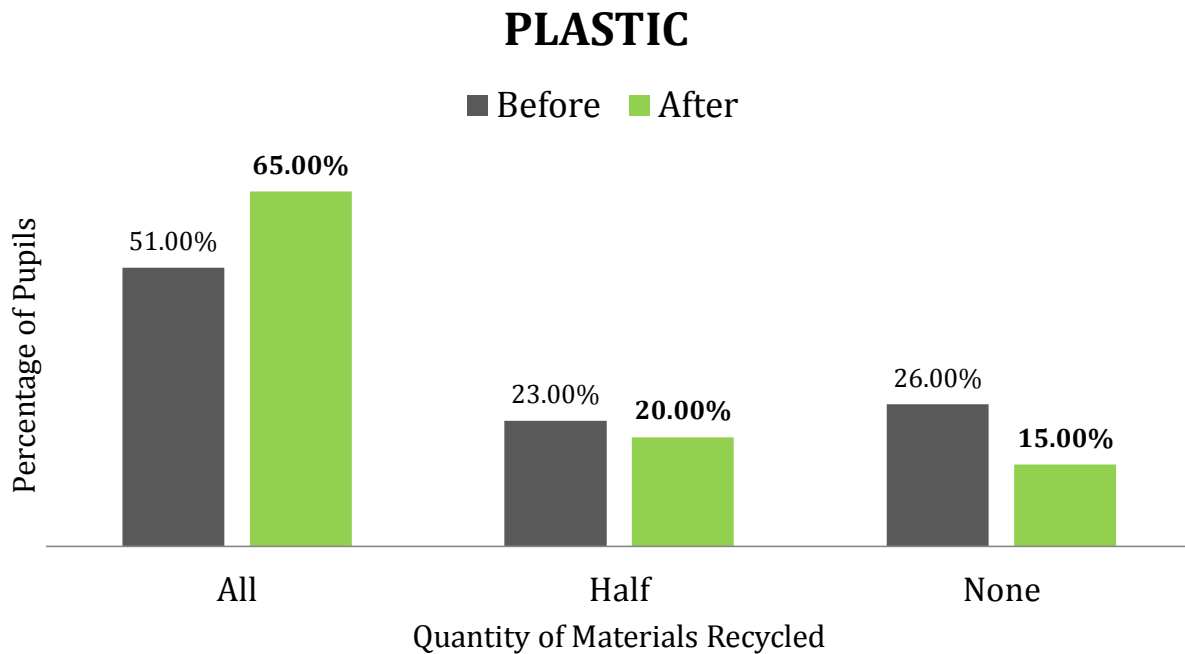
18% increase in pupil awareness of what packaging can be recycled

18% increase in pupil use of re-useable canvas bags when shopping



Pupils at Langbank Primary School developing recycling skills and knowledge during Recycling Heroes workshop

The following graphs detail the changes in quantity of materials recycled by pupils. For pupils to understand the concept, we substituted numbers for words and provided the options: All (100%) , Half (50%) , and None (0%). The results provide evidence of drastic behaviour change and increased levels of recycling.

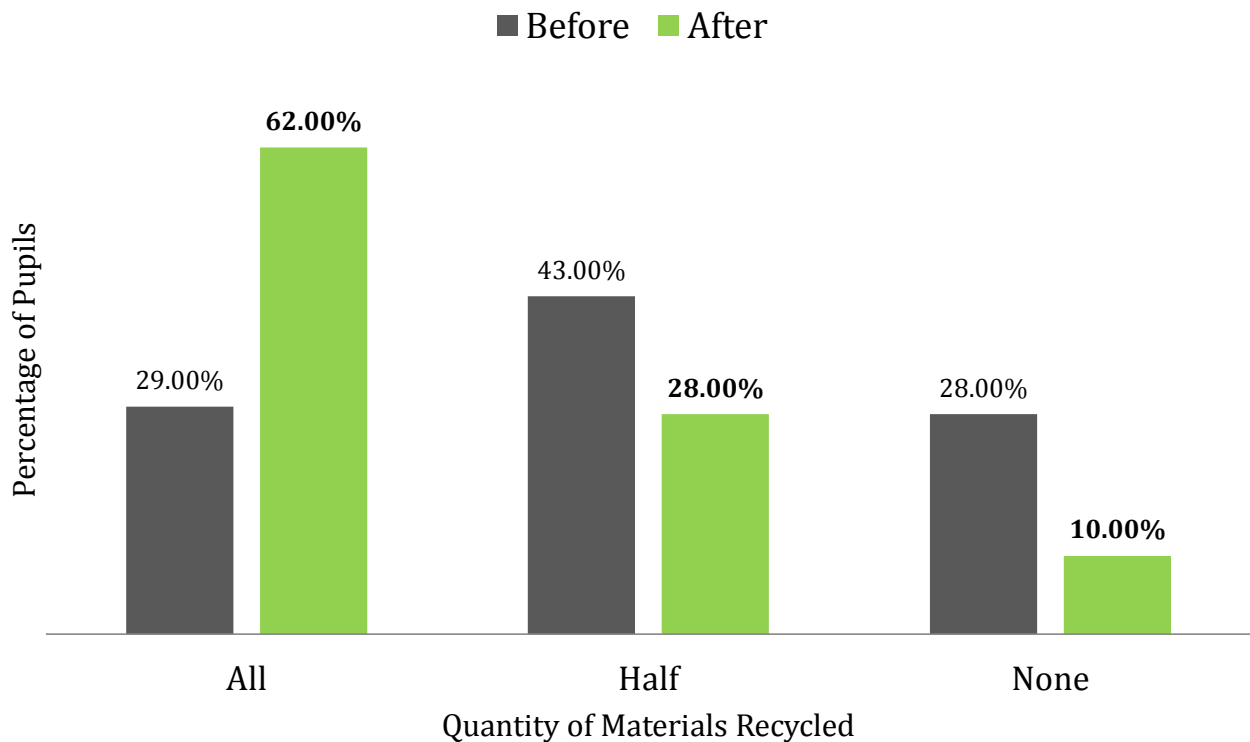


OBSERVATION

14% of pupils showed positive behavior change with a **14% increase** in pupils now recycling ALL plastic after watching Recycling Heroes.

This increase is drawn from an **11% decrease** in pupils recycling NONE of their plastics and a **3% decrease** in pupils recycling HALF of their plastics.

PAPER AND CARDBOARD

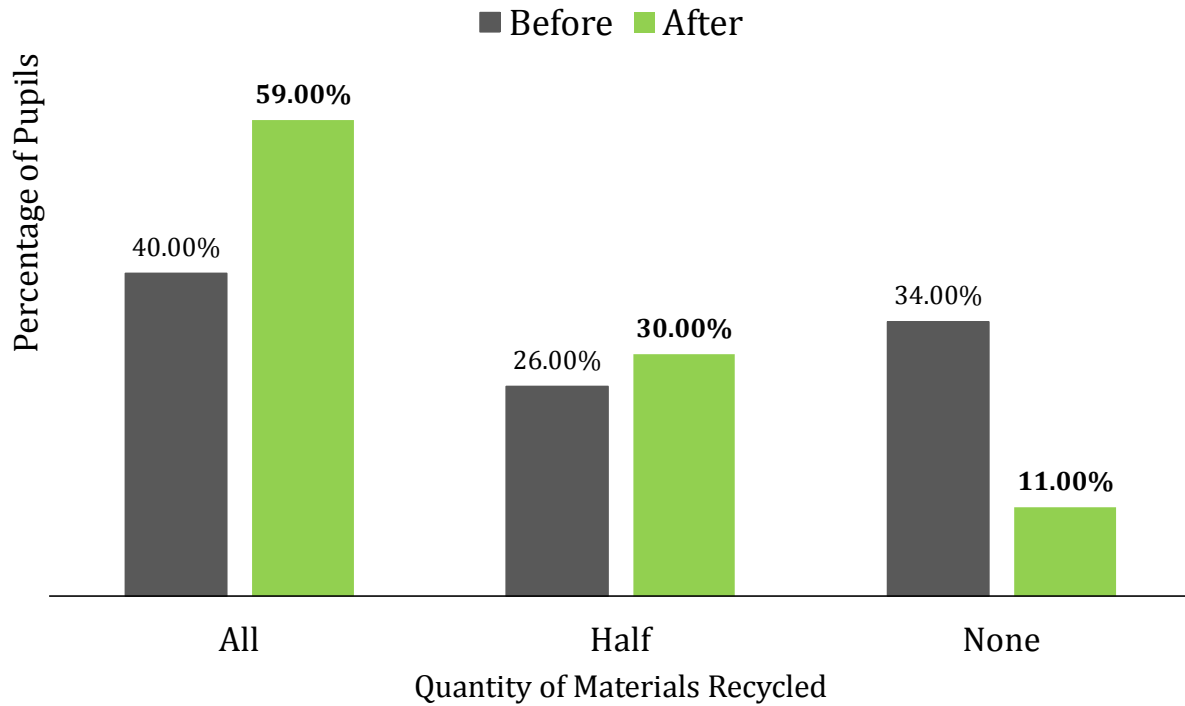


OBSERVATION

33% of pupils showed positive behavior change with a **33% increase** in number of pupils now recycling ALL paper and cardboard.

This is drawn from a **15% decrease** in pupils recycling only half of paper and cardboard and **18% decrease** in pupils recycling none of their paper and cardboard.

ALUMINIUM

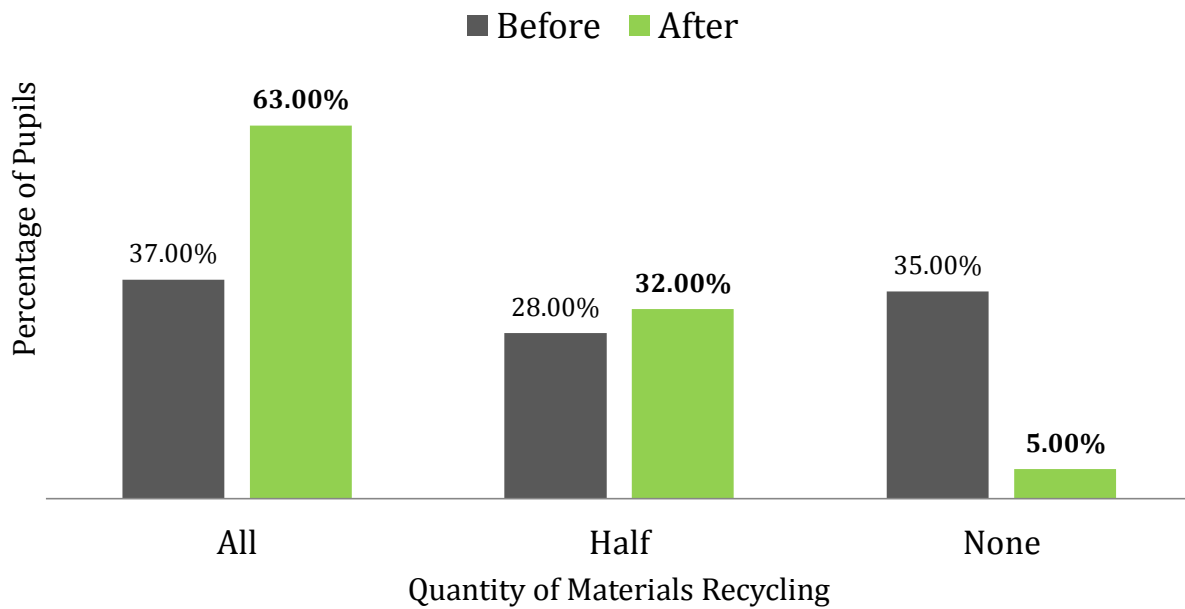


OBSERVATION

30% of pupils displayed positive behavior change with a **26% increase** in pupils now recycling ALL steel combined with a **4% increase** in pupils now recycling half of their steel waste.

This increase is drawn from a substantial **30% decrease** in pupils recycling none of their steel waste.

STEEL



OBSERVATION

23% of pupils displayed positive behavior change with a **19% increase** in pupils now recycling ALL aluminium combined with a **4% increase** in pupils now recycling half of their aluminium waste.

This increase is drawn from a **23% decrease** in pupils recycling none of their aluminium waste.

"Brilliant! All pupils were fully engaged in the show for the full hour. Content, activities and songs really held the kids interest and taught them so much about 'Reduce, Re-use, Recycle'".

Teacher at East Fulton Primary School



"[We have] been recycling paper in class since workshop [and] used canvas bag as gym bag".

Pupils from Gallowhill Primary School

"[Recycling Heroes was a] great opportunity and has equipped the children with the skills to inform adults at home too".

Teacher from Gallowhill Primary School



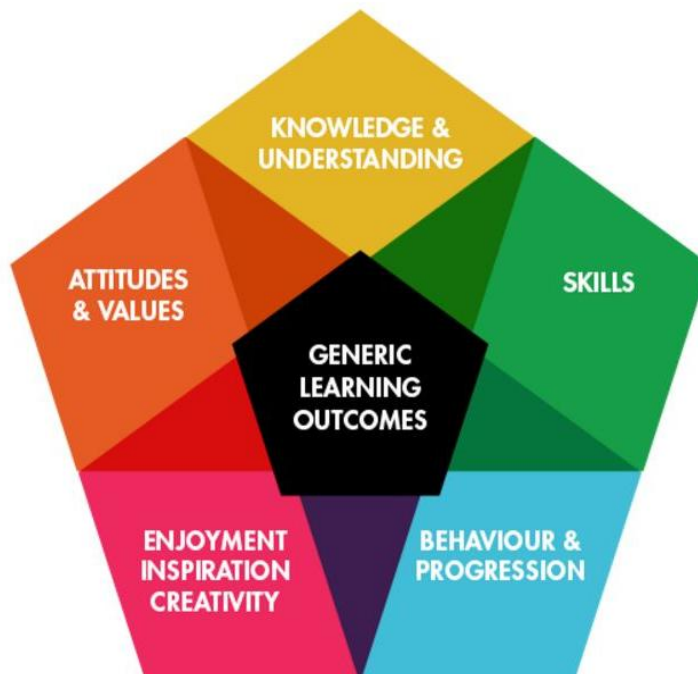
CCF OUTCOME 4

Community Outcome 4

Of 13,450 pupils, increase educational attainment by improving & measuring changes in Knowledge & Understanding, Attitudes & Values, Enjoyment, Inspiration, Creativity, Skills & Activity, Behaviour & Progression in relation to their learning for sustainability.

We met this outcome with **66% to 98% of 10154 pupils** displaying increased educational attainment in relation to learning for sustainability. We did not however meet the originally anticipated 13,450 pupils, and this was simply due to predicting larger class sizes at the point of application. Only once starting the project did we realize some schools had much smaller class sizes.

Each Generic Learning Outcome (as explained on Page 14) is explored individually in this section with key statistics and quotes highlighting the strong evidence of increased educational attainment in relation to each Generic Learning Outcome. We have utilised solely primary data in this section compiled from surveys and questionnaires completed by pupils throughout the year.



*Generic Learning
Outcomes
Diagram – Arts
Council England*



Knowledge and Understanding

83% of pupils understand that recycling food waste scraps in a wormery and creating compost helps care for our environment.

“I loved it [The Worm Inspectors] because we got to learn what worms eat and don't eat” Pupil from Todholm Primary School

98% of pupils who watched *The Worm – An Underground Adventure* learnt new things about worms.

“Very interesting and clever to find out what worms eat. Helped me learn about worms” Pupil from St Margaret’s Primary School

72% of pupils understand what Food miles are after watching *The Forgotten Orchard* demonstrating increased Carbon Literacy Level.

98 % of pupils know that some foods can be grown locally in Scotland. **90%** of pupils understand that growing food relies on pollinating insects and **88%** know that growing food also relies on the seasons.

“...there are 200 hundred different Scottish apples. That there is an apple called the Discovery apple. I also learned that apples start off as blossoms. You can grow plants almost anywhere. I liked learning about cross pollination.” Pupil from Todholm Primary School



Pupils from Arkleston Primary School sharing the different planting methods for beetroot and broad bean seeds

Photos from Arkleston Primary School's Twitter account

81% of pupils know how to recycle paper, cardboard, plastic and metals after participating in a Recycling Heroes workshop

Enjoyment, Inspiration & Creativity

87% of pupils thought The Worm Inspectors was funny and exciting and rated it: 😊

"I loved it because it was funny and interesting. I also liked it because they let us have our own wormery."

Pupil from Todholm Primary School

[The actor was] really funny, she made me laugh the whole way through. I also learned a lot of facts but in a fun way. I loved it

Pupil from St Margaret's Primary School

88% of pupils were excited to taste heritage apples varieties at the end of The Forgotten Orchard.

"[The] apple straight of [sic] a tree tastes better than super markets apples" Pupil from Todholm Primary School

75% of pupils want to stay in character as a recycling superhero.

"Excellent and Amazing. It [Recycling Heroes workshop] was very messy and mysterious because we didn't know what had happened to our classroom."

Pupils from Gallowhill Primary School



Pupils from Langbank Primary School having fun using the wheelbarrow and moving soil for planting

On The Forgotten Orchard, one pupil from Todholm Primary School told us:

"I liked that it told you that even the tiny things can remind you of the most important people in your life. The smallest things can remind you of someone or something important to you."

Behaviour and Progression

After meeting The Worm Inspectors, 84% of pupils want to look after the worms by helping to collect food waste scraps for the wormery.

"The worms in our classroom is fantastic and we all love to have a peak [sic] at our worms to see how they are!"

Pupils from St James Primary School

"I think it [Worm Inspectors] was interesting because I don't like worms but I like worms now."

Pupil from Todholm Primary School

After seeing Katy and her Granddad growing their own fruit in The Forgotten Orchard 77% of pupils want to grow their own fruit.

Apples are not as boring as you think they have a history so grown them. Don't just grow apples grow more fruit and vegetables.

Pupil from Bishopton Primary School

A further 66% now want to grow vegetables too.

"Try to grow your own fruit and veg so you don't need to go to the supermarket all the time."

Pupil from Cochrane Castle

79% of pupils will now re-use plastic water bottles.

73% of pupils will use their Recycling Heroes canvas bag when they go to the shops.

[We have] been recycling tin cans, bottles, cardboard, toilet roll tubes, paper. [My Recycling Heroes canvas] bag went shopping with me and my mum.

Pupil from Gallowhill Primary School



Attitudes & Values

95% of pupils who watched *The Worm – An Underground Adventure* think worms are good and important for our environment.

“It was funny learning about worms helping flowers.” Pupil from Todholm Primary School

74% of pupils told us that *The Forgotten Orchard* made them think about where food comes from and how far it has travelled.

“It is important to buy locally to save of food miles.” Pupil from Glencoats Primary School

69% of pupils are now interested in looking after the environment.

“You would be healthier and help the world and you can make your own stuff and don't litter” Pupil from Cochrane Castle Primary School



*Pupils enjoying *The Forgotten Orchard* theatre show and tasting heritage apples at the end*

“Buy food locally. Recycle. Turn of [sic] lights and computers when not in use.”
Pupil from Glencoats Primary School

“Grow some fruit and veg in spring. Don't use as much electricity”
Pupil from Cochrane Castle

“I would say to help the environment is to recycle, walk instead of driving and turn lights off.” Pupil from Langbank Primary School

“It is important that you take part in things that the elderly do because it could be very interesting.”
Pupil from Todholm Primary School

Skills

After watching *The Forgotten Orchard*, 87% of pupils know how to plant seeds to grow their own vegetables.

"[...] you only need some seeds, water and somewhere to put it and you can make a tree." Pupil from Todholm Primary School

After watching *The Worm - An Underground Adventure*, 96% of pupils know how to reuse food scraps.

After participating in a *Recycling Heroes Workshop*, 81% of pupils can recycle paper and cardboard, plastics, steel, and aluminium in the correct bins.



Pupils show they can put the correct materials in recycling bins during a Recycling Heroes workshop



CCF OUTCOME 5

Community Outcome 5

15 schools will have improved bio diversity and new community green spaces with the planting of the orchards. Local awareness and engagement in a low carbon future may also be increased.

We exceeded this outcome with **25** schools having improved bio diversity through the planting of seeds and trees distributed by Eco Drama and by the delivery of bespoke CPD training. In addition, many schools have embarked upon additional projects such as the establishing of a willow tunnel, planting additional edible crops, and creating habitats for wildlife.



*Photographs of P6/7
at Langbank Primary
School creating new
green spaces*

“The whole school have been involved in spring planting/planting beetroot and beans from Eco Drama. We have created new planting space by clearing weeds/bushes/trees from old raised beds”.

Morna Mitchell,
Arkleston Primary



To support teachers in leading the development of green spaces, and particularly the establishment of a school orchard, we ran two CPD sessions on 25th January 2017. 15 teachers attended these sessions and each school left with 5 Scottish heritage apple trees, 5 stakes, tree ties and guards, mulch mats, and the knowledge to establish their school orchard.

The CPD sessions were lead by Andrew Lear from Plants with Purpose. Each session involved a mixture of practical activity and theoretical work to enable each teacher to lead planting activity back at school. In addition to this, we created a follow up step-by-step guidance sheet for use on the planting day which is attached as Appendix 7.

“I enjoyed the CPD session. I am our school's Eco co-coordinator and plan to start an orchard on the site of a janitor's house. I now feel quite confident about planting and caring for the trees. Andrew is so knowledgeable and I didn't know I would find the process of growing apple trees so interesting! Thank you.”

Renfrewshire Teacher



Local awareness and engagement in a low carbon future has been increased through digital communications.

Schools have utilised Glow Blogs to share information about their Eco Drama activity with parents and the wider school community. Each class has their own Glow blog, housed on the school's main website, which they use to share their activities with parents, the wider school community, and the public.

We are delighted to have been featured in a large number of blogs written by teachers and pupils across Renfrewshire. A few of our favourites:

Cochrane Castle Primary School – Primary 2 Blog

“The boys and girls are desperate to make their own “Rubbish Monster” and Miss Keegan said we can do this next week. Please allow your child to bring in any “junk” which they can use to make their monsters. I can’t wait to see them!” (Keegan)



Barsail Primary School – Primary 1 Blog

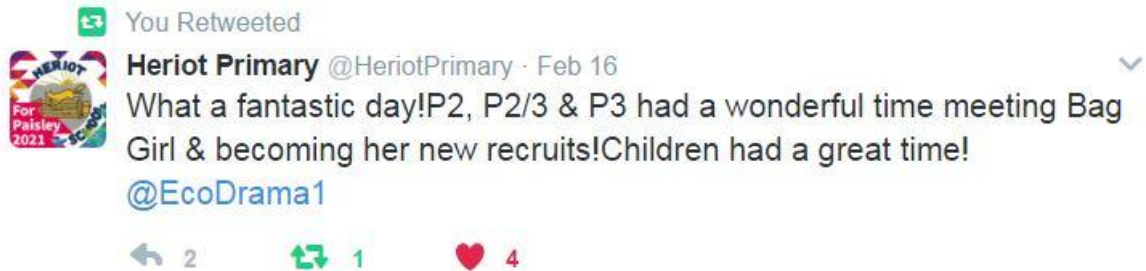
“The children had great fun today learning about the important [sic] of recycling at home and the 3 R’s (reduce, re-use and recycle). They got a shopping bag to take home with them and this can be used when you are going shopping 😊 the children are now experts in this area!!!!” (Morrison)



A full list of GLOW blogs can be found in Appendix 5.

We have engaged with local communities through social media – primarily Twitter, Facebook, and Instagram. This has proved a fantastic way to engage with the local community and raise awareness with many ‘re-tweets’ and ‘likes’ of posts relating to our work.

A few of our favourite tweets:



Lastly, we have engaged with organisations also working in Renfrewshire to embed greener living in the community, linking up the fantastic work that is taking place across the local authority.

Whilst attending a Royal Horticultural Society Edible Garden CPD event, Eco Drama's Artistic Director, Emily Reid spoke with teaching staff and parents from schools across Renfrewshire who have received visits from Eco Drama this year. This was an excellent opportunity to meet with both parents and teaching staff and to hear firsthand the impact of Eco Drama's presence in Renfrewshire this year. Also notable was the high number of Renfrewshire Primary Teacher attendees at this CPD, perhaps inspired to attend by their recent Eco Drama experiences and the promotion Eco Drama had done of the fantastic [RHS Campaign for School Gardening](#). Below, Emily shares her discussions with parents and teachers:

"Two parent volunteers from Langbank Primary were highly enthusiastic about the Recycling Heroes workshop saying that they 'had never seen their pupils so engaged in their learning, with such energy and focus present'. They went on to say that they had noticed an increase in their children recycling more at home and that the wormery was proving a big hit. Children enjoyed the task of food waste collection when pretending to be 'worm inspectors' and these parents felt the element of drama added excitement to the task. They said both the children, and themselves, were excited to harvest their first batch of compost and one of the parents said they had started to compost food waste at home also and were going to buy a wormery."

Emily Reid, Artistic Director, Eco Drama



Photograph of attendees at Edible Garden CPD run by Royal Horticultural Society in Renfrewshire

Photo courtesy of Angela Smith

CO₂ REDUCTION

Eco Drama's Magic Van Tour of Renfrewshire Schools aimed to reduce carbon in three main areas:

1. Carbon Savings from Food Waste Reduction Work
2. Carbon Savings from Community Food Growing
3. Carbon Savings from Waste Reduction

Moreover, we reduced emissions created from our projects activities by touring in an electric car and eco van run on recycled waste vegetable oil, reducing CO₂e emissions by 85%.

The projects total carbon savings for each area are as follows:

Carbon Saving from Food Waste Reduction Work	44.53 tCO₂e (Primary Data)
Carbon Savings from Community Food Growing	9.2 tCO₂e (Speculative Data)
Carbon Savings from Waste Reduction	49 tCO₂e (Primary Data)
Carbon Savings from Touring on Recycled Cooking Oil Using Bio Diesel omitted 85% less CO ₂ E than Diesel, so only 0.18 tCO ₂ Ee in comparison, making a saving of 1.003 tCO ₂ Ee during the lifespan of the project.	1.003 tCO₂e (Primary Data)
GRAND TOTAL Carbon Saving totalling Food Waste, Food Growing & Waste Reduction Emissions, less 0.18 tonnes CO ₂ e emitted from using Bio Diesel.	102.55 tCO₂e



See Appendix 1 for full details on carbon calculations.

FINANCE AND ADMINISTRATION

Eco Drama was awarded £108,758.16 and this funding was fully spent by the end of the project year.

All finances were administered effectively and budget changes discussed with and approved by our Development Officer prior to being made. Our original budget saw some changes, mainly due to recruitment and staffing. There was some underspend in the General Manager line, due to period of notice before being able to take up the role, as well as underspend in recruitment and rehearsal of performers, due to being fortunate in having returning performers. This meant funding could be used to allow us to deliver more dates of the tours and increase our beneficiary numbers. It also allowed us to cover some unanticipated costs, including necessary repairs to the car and van and purchasing equipment after older equipment broke down. All underspend was appropriately spent and used to help Eco Drama fulfill our project aims and objectives.

The project began with a period of recruitment for two key staff members, as Eco Drama had been operating on a lower staff capacity in the previous project year due to lack of funding. The Artistic Director undertook a recruitment process for the full-time General Manager and part-time Schools Coordinator in April and May, and by the end of June, both of these new staff had taken up their roles. These staff needed trained in their new roles and time spent on this until August, when our tours were due to begin with the new school term.

Once all 3 core staff members were trained and in post, this turned out to be the perfect number of staff to meet the administrative demands of the project effectively and comfortably. In particular, having a full-time General Manager was a first for our organisation with much less stress put on the Artistic Director role, which had historically been performing multiple roles. Having a variety of roles focused on individual project areas and specialisms, and increased human resources in general, led to greater focus and development of new ideas and ways of doing things that ultimately made it a stronger, more effective project.

LEARNING AND REFLECTION

CO₂e Estimations for Food Waste Reduction

In our application, our carbon reduction estimation for food waste and composting was based on schools using the wormery & kitchen caddy for a full year (52 weeks). However, this was an unrealistic goal as the project took a few months to set up and also we had to operate around school term time and a project end date of March 31st. Thus schools did not begin using their new resources until mid-way through the project, resulting in a lesser number of weeks that schools were using their kitchen caddies (26 weeks) within the measured project period. This meant we had less data to capture, and thus lower CO₂e reductions to what we originally anticipated, making it look like we did not achieve our targets. However, had we made accurate estimations at application stage, we would have reported on target. This explains why our original carbon reduction estimation for 52 weeks (1,080kg) is much higher than our actual primary data of carbon reductions made over the actual project period (590.43kg) as they were only measured over 26 weeks instead.

CO₂e Estimations for Community Food Growing

The growing elements of our project had to take place within the autumn and winter months of 2016/17, which was unavoidable due to the project year requiring to be set up from April-June and further delays due to school summer holidays. Thus schools did not receive their food growing related productions and associated seeds and resources until autumn. We mitigated this by buying seeds that could be sown throughout the winter, however only a few schools planted the seeds prior to March, with the majority citing that they would be planting their seeds in the raised beds from April onwards, which is outwith the CCF project timeframe. Although we have much evidence from schools of them planting the seeds in raised beds, utilising their growing space and engaging with the topic of food growing, we have been unable to get primary carbon data relating to the weight of food grown before March 31st 2017 due to schools not yet having a harvest to weigh. However, we do have proof that 8 schools have planted their seeds already, through picture documentation, case study diaries and questionnaires returned to Eco Drama,

and the remaining 17 schools stated that although they have not yet planted their seeds, they do intend to do so in Spring.

CO2e Estimations for Waste Reduction

Originally we aimed to divert 50% of all 2,250 pupils' recyclable waste from landfill by reducing, reusing and recycling activities at school and at home. However, our baseline figure was not realistic as we did not account for the fact that some of the pupils would already be recycling all of their waste by the time our project visited, and thus there was no room to reduce these specific pupils' emissions (for this project it was 39% of pupils). Moreover, we should have accounted for the fact that we wouldn't manage to affect 100% of beneficiaries' behaviours, and instead should have made a more modest estimation, for example aiming to influence 2/3 of the beneficiaries' waste behaviours. For our project we managed to influence 980 pupils out of 1,391 to increase recycling their waste by 50%.

Lifetime Savings

We increased our lifetime savings for food waste reduction and composting from 2 years in our application to 10 years in our final report after working with our project community. This is because we can see how effective the wormery and kitchen caddy are as a method of food waste collection with this target group. Through the combination of imagination and creative education incentivising children to feed the worms with food waste, whole schools became engaged with this positive behaviour change. Teachers and parent volunteers commented on how this resource will be very useful to them in future years for creating compost for the garden, and with schools pushing forward with their Eco Schools goals, we can estimate confidently that the lifetime savings will continue for at least 10 years.

Weighing Food Waste, Vegetables & Recycling Waste

This is an essential requirement of the CCF in order to capture primary data for carbon calculations. Although regularly asking our project community to do this, it is hugely notable that this is not an appealing task due to low responses for this particular element. The community engaged fantastically with all other project activities, but no matter what way it was presented, the

task of regularly weighing waste/food is simply not appealing to children or adults. This time consuming task really needs to be done by paid staff members of CCF groups and plenty of time accounted for doing this within job descriptions. Also be sure to question, would the resources/fuel expended on weighing your communities waste weekly, outweigh the carbon saving the project is making? For us, with a community of 27 schools, it would.

Qualitative Data

We found that the qualitative data gathered was incredibly valuable in monitoring the success of our project. It displayed the quality of engagement with the learning experience with both head and heart, and evidenced how it had affected participant's intrinsic values, important for any behaviour change work. In engaging emotions as well as intellect through a creative learning experience, we found motivations for action, behaviour change and progression were stronger, and this was demonstrated in the feedback collated throughout the project. During a carbon project, the heart must be engaged for people to take action and projects should place equal importance on the quality of the awareness raising, education and learning, and measure this. Qualitative data will speak for itself, and by engaging with people's emotions and intrinsic values, perhaps the biggest impact of all will be made.

Evaluation as a Creative Process

We found that the more creative we made our evaluation processes, the better quality feedback we got, e.g. including space for pictures and free thought, and building evaluation and reflection into sessions in creative, practical ways.

Environmental Policy

We ensured all project staff members knew about our environmental policy at the time of beginning work. By inspiring a shared vision, it encouraged staff to consider their behaviour, e.g. by turning off lights, drinking from reusable bottles or recycling waste - essentially demonstrating themselves to be positive green role models. We found that embedding the environmental policy in our practices, as well as the process of delivering the creative learning experiences, ensured staff members also underwent behaviour changes as a result of the project.

LEGACY

Eco Drama's Magic Van Tour Renfrewshire will have a lasting legacy in both the community and in the ongoing reduction of carbon emissions.

The ongoing impact of the project's activities:

- ✓ The wormery and kitchen caddy will continue to be used by the 23 school communities into the future, helping to reduce food waste further and engage new learners with the theme. Eco Drama will follow-up with schools 6 months & 1 year after the project ends to check the wormery is still being utilised and to provide schools with information and support.
- ✓ We will undertake a follow-up survey 3 months after the orchard has been planted to gain data about what other growing initiatives have been started in the school & if other community members are engaging with the orchard. We will ensure schools have access to ongoing orchard support by linking them to Forth Valley Orchards at Forth Environment Link and promoting Andrew Lear's Orchard Aftercare Workshops and other orchard information of interest.
- ✓ The reflective work covered in the Classroom Activity Packs mean the message will be enhanced further with learners. Schools will have art work & posters displayed around their school for a long time after our visit as a reminder of key messages learned.
- ✓ Pupils will have a badge, information booklet and cotton bag now with them at home. They have been encouraged to show parents so that the waste reduction message reaches them also.
- ✓ Using theatre & drama in education is memorable as it appeals to different learning styles and multiple intelligences. The message has shown to resonate deeper with participants throughout our qualitative feedback, increasing the aim of long term behavioural change, and bringing a further reduction in CO₂e emissions.

- ✓ The interactive nature to Eco Drama's work means young people are involved and not just passive listeners. They are also involved in decision making within workshops and are encouraged to use their voice, form opinions and become modern ambassadors for the environment. With heart & mind involvement they have a better chance of making lifestyle changes, and maintaining that change, going forward.

What the organisation will continue to do to reduce CO2e:

- ✓ Eco Drama will continue to tour its successful schools touring programme for years to come responding to demand (in Scotland and the rest of the UK) each time reaching new communities with awareness raising projects, productions, training and workshops. We will continue to seek out appropriate funding opportunities to help cover costs for schools beyond the lifetime of the CCF to ensure our workshops plays and training are accessible for all schools.
- ✓ Reinforcement of Eco Schools themes in our future projects will further encourage school communities to continue environmental action, and pupils will continue to be encouraged to take the message home.
- ✓ Continue reducing travel emissions of the work itself by using recycled waste cooking oil in our touring van and an electric car, as well as reducing our impact in general in relation to waste and energy, so that as a company we operate in the most carbon efficient manner. The van and car wraps will continue to promote the use of waste vegetable oil, electric fuel, and the idea of reclaiming and recycling.

New facilities available for community use:

- ✓ The 45 apple trees, seeds and fruit bushes planted across the 25 primary school grounds during the project will continue to grow and generate fruit/vegetables for both the school and local community and will serve as a lasting reminder of the project for years to come.
- ✓ The orchard may inspire further growing initiatives within the school and community, expanding the orchard to grow more fruit trees, fruit bushes, herbs and vegetables.



Eco Drama
Studio 236, The Briggait
141 Bridgegate
Glasgow
G1 5HZ

www.ecodrama.co.uk



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