Engaging staff in carbon reduction: an evaluation of Carbon Literacy training

Briefing Paper for Leeds Climate Commission

Milena Büchs and Rebecca Payling, with Matthew Hogarth

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Abstract

This briefing report evaluates the effectiveness of Carbon Literacy (CL) workplace training in encouraging more environmentally-beneficial attitudes and behaviours, and reduction of carbon footprints both at work and at home. The evaluation is based on case studies with Opera North and ITV. We find evidence that Carbon Literacy training can encourage more climate-conscious behaviour and make practical recommendations for running Carbon Literacy in your organisation.

Summary of findings

- We find evidence that Carbon Literacy Training made participants significantly more knowledgeable about climate change and climate action compared to a control group that did not take part in training. The training also encouraged participants to reduce emissions, both at the work place and at home.

- Carbon Literacy training works because it creates new work cultures and directly engages staff in making a difference to the organisation. In this way, the intervention can be considered a form of professional development similar to traditional workplace training.

- Carbon Literacy Training can help to increase general staff motivation and identification with a common cause at the workplace.

- Carbon Literacy Training is easy to implement from an organisational perspective (provided that financial and time resources for it are available), because it can be tailored to different workplace settings.

- Existing contexts can limit results of the training. For instance, the training can only encourage organisational and behaviour changes that people are able to do within existing institutional and technological contexts. To achieve even larger impacts, higher level policies and infrastructures would need to become more supportive of carbon reduction.

Practical Recommendations

Our recommendations are based on the findings from this project and on insights from the training leads in Opera North and ITV.

- Get senior leadership on board before you start to train people; senior leadership support and championship for the programme is key for success

- Aim to train all members of staff in the organisation, this is the key to culture change within the organisation. Train as many people as possible within the organisation. Tackling the climate emergency is a big challenge, and hence we require broad culture change. If only a few "key people" within the organisation are trained up, there is a danger that they become isolated and lose motivation.

- In advance of the training, identify areas where your organisation can make the biggest emission savings, as well as areas that present challenges. Ask the Carbon Literacy trainer to reflect this in the training programme, they can tailor it to your organisation.

- Commit to a whole day of training to enable people to focus on it and reduce distraction. It seems like a big ask, but it'll pay in the long run, after all tackling climate change is a big challenge that needs time and resources.

- Don't be afraid that people will react badly to the training. Carbon Literacy is a programme where all the cards are being put on the table upfront, and then it lets people come to their own conclusion. People who at the start of the sessions are most sceptical against the training often become advocates.

- Identify a training lead in the organisation who manages the process and liaises between management, staff and trainers. They should also keep engaging staff on carbon reduction and sustainability once training is completed, e.g. with regular updates on how the organisation is doing in reducing its carbon footprint, carbon saving tips, sustainability staff awards, etc.

- Evaluate the training programme through before/after surveys and measures of environmental performance. Collate independent feedback on the programme. This helps to tailor the programme, demonstrate impact, and make the process as transparent as possible.

Background

Globally, it is critical for countries to rapidly reduce their carbon emissions, ideally to net zero before 2050 in order to not pass the intended target of 1.5°C above pre-industrial levels, as recommended by the IPCC (2018). Climate change is a 21st century challenge that perturbs many natural and anthropogenic feedbacks and processes, threatening the futures of food and water security, predicting extreme weather events and conversing biodiversity to name a few. On the 1st of May 2019, the UK declared a Climate Emergency with the commitment to reach net zero emissions by 2050 (CCC, 2019). Action by the government, businesses and other organisations, as well as individuals will be required for this target to be achieved. The authors of the report Net Zero – The UK's contribution to stopping global warming (CCC, 2019) argue that more than 50% of emissions elimination requires members of the public to change some aspects of their lifestyles, to act more environmentally-conscious. This highlights the importance of 'consumer social responsibility' as well as Corporate Social Responsibility in implementing changes in behaviour (Wells et al., 2011).

Organisations can make an important contribution to promoting carbon reduction behaviours by engaging their employees, volunteers, etc. through training programmes. The Carbon Literacy Project (CLP) is an example of such a programme. It aims to increase participants' understanding of climatic issues, and foster carbon saving activities in the workplace and at home. Knowledge, attitudes, values and social norms can be important factors for the extent to which individuals exhibit pro-

environmental behaviour (Kollmuss & Agyeman, 2002; Buchs et al. 2017; Bardsley et al. 2019).

This study

Despite a large body of research on pro-environmental behaviour change interventions at the individual and household level, little research has been done so far on the effectiveness of training programmes at the workplace (Hogarth, 2019). While employee training has cost implications for organisations, potential benefits include long-term energy and hence cost savings; increase in reputation, and employee commitment. This report summarises findings from an evaluation of the effectiveness of Carbon Literacy training in Opera North and ITV in Leeds. This project was funded by the Economic and Social Research Council's Impact Acceleration Account, administered by the Leeds Social Sciences Institute, University of Leeds between July 2018 and June 2019.

Carbon Literacy

The Carbon Literacy Project (CLP) is a third sector organisation that designed a training programme with the aim to ensure that all of their participants achieve "[a]n awareness of the carbon costs and impacts of everyday activities and the ability and motivation to reduce emissions, on an individual, community and organisational basis" (CLP, 2020). Awareness of individual action for carbon-saving measures is achieved through a day's worth of learning, run by trained CLP employees who teach about climate change and its impacts, along with recommending measures that participants can do to reduce their carbon footprint. To date, there are more than 14000 individuals and 1158 organisations who have taken part, contributing to 5-15% carbon savings per participating individual (CLP, 2020). CLP also collaborates with 8 consortiums (CLP, 2020), a number of councils, academic institutions and companies (such as Leeds Climate Commission and Manchester City Council) who support the funding and continuation of the project. It was through the Albert Consortium, part of

the British Academy of Film and Television Arts (BAFTA) that facilitated ITV's collaboration with CLP.

Study design

Carbon Literacy Training was provided to 60 ITV employees between October 2018 and February 2019 and to 30 members of staff between November 2019 and January 2020 in Opera North. This is the basis for this evaluation, but training has continued in both organisations following the study.

This study uses a mixed methods (qualitative and quantitative) approach to evaluate impacts of the training. Following a field-experiment study design (Bardsley et al. 2019; Buchs et al. 2018), before- and after-training surveys were conducted in Opera North with 21 CL training participants, as well as a control group of 10 non-participants to quantitatively test potential impacts of the training on employee attitudes and behaviours. A comparison between training and control group is necessary to test whether any changes in the score before/after the training are related to the training, instead of other contextual changes over time. In addition, 29 of the ITV training participants took part in a survey before and after the training. We can compare scores before and after the training for this group, but cannot test whether the changes differ significantly compared to a control group. Therefore, we cannot say with certainty that any changes in before/after scores are due to the training. The surveys for ITV and ON contained a range of questions on staff perceptions of climate change, perceptions of the role of the organisation they work for in tackling climate change, and staff behaviours at the workplace and at home. Most variables use an ordinal score, e.g. reaching from 1 "not at all / never" to 5 "very much / always".

In addition, Hogarth (2019) collected qualitative data on the CL training in ITV as part of his MSc Dissertation at the University of Leeds. He conducted participant observations of the training workshops and interviewed four training participants and the project lead in ITV, as well as two CL trainers. We also summarise main findings of this Dissertation in our report.

Findings

Carbon Literacy - Opera North

To test whether taking part in the CL training resulted in changes in participants' attitudes and/or behaviours in Opera North, we calculate differences in the before- and after-training scores for each question. We then test whether there are significant differences in these change scores between the training and the control group using Wilcox Mann-Whitney tests which are suitable for ordinal, non-normally distributed dependent variables (here the change scores). A critical value of $p<0.1$ was used to test significance due to the small overall sample size of 31.

The Wilcox Mann-Whitney tests reveal that perceptions and behavioural intentions to adopt low carbon behaviours significantly changed among training participants compared to the control group.

Perceptions. Training participants became more aware of the contribution that they individually, and ON as an organisation make to climate change with higher agreement following the training with the following questions: "Q12_1 My behaviour and everyday lifestyle contribute to climate change", and "Q3_4 Organisations like the one I work for are a significant contributor to climate change". Training participants also felt significantly better informed following the training about ways in which they could reduce their own emissions, and how they might be able to influence environmental impacts of ON, with significantly higher levels of agreement to the following questions post-training: "Q12_4 I feel well informed about ways in which I can reduce my personal carbon footprint" and "Q3_2 I am able to influence the environmental impact of Opera North".

We did not see any changes in more general attitudes towards climate change which indicates that awareness of climate change as such was already established in both groups before the training.

Behaviours at the workplace. Training participants also showed significantly higher levels of agreement than control group members with several questions about low-carbon behaviours at the work place. Following the training, participants showed higher levels of agreement with statements about their engagement in the following carbon reducing behaviours: "Q1_6 Consider environmental factors when buying supplies", "Q1_7 Give advice on environmental practices to colleagues", and "Q1_9

Consider environmental factors when investing money (including occupational pensions)". Behaviours where no significant changes were observed included several 'easy to engage in behaviours' such as "switching appliances off when not needed" and "recycling waste". The reason for this could be that these behaviours were already well established within the organisation so that the training did not make a significant difference to them. Changes were also not significant for several behaviours which might be more difficult to change such as "Share transport with colleagues to make the same journey", "Use public transport rather than travel by car", or "offset emissions for flights".

These changes concur with comments that the organiser of the training programme in Opera North made a few months into the programme. They said in their experience, arguments about improving the organisation's sustainability and carbon savings were met with a lot less resistance by staff after the training because people now understood better what was at stake if they did not take action.

Behaviours at home and in the workplace. The training was also effective in encouraging participants to engage in low carbon behaviours that are relevant to both the workplace and outside the workplace. Compared to the control group, training participants agreed significantly more that they are "Q4_7 Sharing a car with people outside of the household who need to make a similar journey", "Q4_11 Reduce[ing] meat and dairy consumption" and "Q4_12 Buying more seasonal or local food". However, there were no significant changes for several other 'easy to engage in' items such as "putting on more clothes when you feel cold rather than turn up the heating", "switching appliances / lights off if not in use", "reduce packaging" and "recycling". As above, the reason for this could be that these behaviours are already wide-spread so that the training did not have a significant impact on them. Also similar to the work-place behaviours, no significant changes were observed for more difficult low carbon behaviours such as using more public transport or conduct fewer flights. This is coherent with previous research which shows that these types of behaviours are difficult to shift on a voluntary basis, without there being regulations or stronger financial incentives in place for people to do so (e.g. Büchs et al. 2018; Büchs 2017).

The training also received high satisfaction scores – all participants "agreed completely" (= highest score 5) with the following statements: "I enjoyed the Carbon Literacy training", "As a result of the training I will change how I do some things at

work (or have already done so)", "The training programme is likely to help Opera North to reduce its carbon footprint".
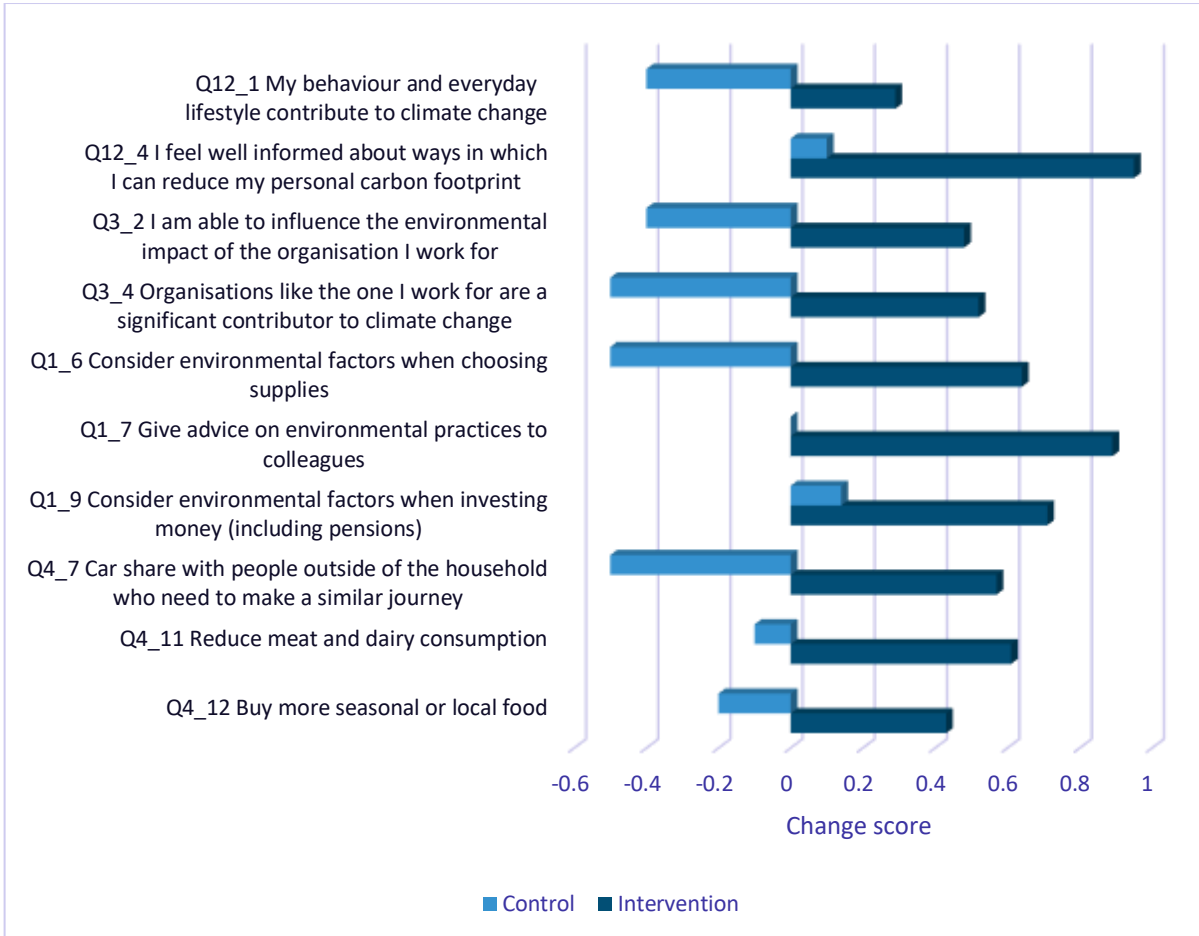

Figure 1: Before/after change scores for the intervention (training) and control (no training) group in Opera North. A positive score means that agreement with this question has increased after the training. Differences between these scores are significant at the 10% level or higher with a Wilcox Mann-Whitney test, see table 1 in the appendix.

Carbon Literacy - ITV

Outcomes of the CLP training were examined both on an organisational and individual basis (Hogarth, 2019). One key aim for this company was to train all production staff in CL because it is in this department that most emission- contributing practices took place. One production manager commented that it was easier to introduce carbon saving measures once the CLP training had been undertaken because all colleagues would then be aware of the purpose and benefits of the change, increasing acceptability of low-carbon technologies in this setting. Interviews with staff confirmed that they had become more accepting of changes at the workplace, for instance of using video conferencing to reduce travel emissions as stated here by one of the lighting coordinators: "I thought it [video conferencing] would just be a bit of a fad and we'd go back to driving everywhere but I have changed my mind on that... most people are happy to do it now (ITVP1)". The training lead in ITV also confirmed in his follow-up interview that they found staff had become more willing to engage in new carbon saving-practices following the training.

However, several participants noted in their follow-up interviews that there was still scope for further action at the workplace, for instance to switch to an electric-only fleet of vehicles, but that these would need to be supported by management and other colleagues to be put in place.

Interviewees also reported a greater or renewed interest and positive attitude to climate and environmental issues. Hogarth found that during the training, framing climate change as solvable within governmental systems helped to spark discussion and confront current lifestyle practices such as travel and consumerism that contribute to emissions. Training participants also provided positive feedback on the training and stated the felt motivated to do more.

A comparison of answers to the surveys before and after the training shows that participants show significantly higher levels of agreement with the statement "I feel well informed about ways in which I can reduce my personal emissions" following the training (median increased from 3 to 4, p-value for a Wilcoxon Mann-Whitney test = 0.001). Over half of the survey participants also stated in the follow-up survey, that they now engaged more often in the following activities at home compared to the previous month: "Put on more clothes when you feel cold rather than turning on the heating or turning it up", "Only filled up the kettle to the required level", "Turn

appliances off standby", and "Recycling". Note that we cannot determine whether this was due to the training because we have no data for a control group. No substantial changes were report for other behaviours such as greater use of public transport, more car sharing, or booking fewer flights.

A couple of participants stated in their follow up interview that they had not yet managed to make more significant changes to their lifestyles. Common obstacles that they mentioned included financial costs and inconvenience, illustrating that attitude shifts only had a limited effect.

Study Limitations

Due to limited resources only a small number of organisations and small samples of participants within organisations could be included in this study. A larger study that compares effectiveness of carbon reduction training programmes across different sectors and workplace settings would be useful.

Appendix

	Q12_1	Q3_4	Q12_4	Q3_2	Q1_6	Q1_7	Q1_9	Q4_7	Q4_11	Q4_12
Mean change score intervention group	0.29 (0.28)	0.52 (0.32)	0.95 (0.20)	0.48 (0.21)	0.64 (0.20)	0.89 (0.28)	0.71 (0.32)	0.57 (0.23)	0.61 (0.20)	0.43 (0.16)
Mean change score control group	-0.40 (0.16)	-0.50 (0.30)	0.10 (0.10)	-0.40 (0.22)	-0.50 (0.22)	0.00 (0.38)	0.14 (0.26)	-0.50 (0.37)	-0.10 (0.23)	-0.20 (0.33)
p-value WMW test	0.096	0.015	0.008	0.019	0.007	0.070	0.067	0.036	0.064	0.053

Table 1: Wilcox Mann-Whitney test results, standard errors in brackets

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