



Young people and greenhouse gas emissions at music festivals

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Keywords:	Climate change, Peer education, Music festivals, Young people
Abstract:	<p>Young people are major players in implementing long term climate policy goals. This paper describes how, for over ten years, young people as peer educators have been engaging with both festival goers and festival organisers to help reduce their greenhouse gas emissions, through the "Face Your Elephant" interactive public engagement exhibition. The innovative approach trained and worked with over a hundred young peer educators. It engaged with over 10,000 festivalgoers helping them to take action to reduce their carbon footprint in an exciting way, through an exhibition at a music festival</p>

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Reviewer 1

1. The surveys, based on the information reported in Table 1, seem to be a qualitative survey. It is important to note the limitations of a cross-sectional study. You state the survey was quantitative in nature. This is not clear to the reader as no data is presented other than attendees at various music festivals. ADJUSTED TABLE 1 TO INCLUDE NUMBERS, MOVED TABLE 1 TO NEARER TO THIS SECTION AND ADDED TEXT ON OTHER DATA COLLECTED

2. Including the survey as an Appendix would be useful for those who wish to replicate your work. INCLUDED TWO SURVEYS AS APPENDIX A AND B

3. Peer education is the main method by which to convey the message of energy conservation and climate change. More information is needed on how peers were identified and trained. ADDED TEXT IN THE KEY CONCEPTS SECTION

4. The theory section of the manuscript seems to be an "add-on". The findings should be presented in light of the theories you state were implemented. RESTATED OUR OVERALL OBJECTIVE OF THE PAPER IN METHODS SECTION

5. Describe the implications of the findings of this work on environmental education efforts at large music festivals. Will policy result from this peer education model? TEXT ADDED IN CONCLUSIONS

6. You mention partnerships are an important component required for this work. Briefly describe the partners and the development of a partnership. TEXT ADDED IN PROJECT DEVELOPMENT

7. Describe the future directions of this work and are the findings generalizable to other areas that engage environmental education? EXTRA TEXT ADDED IN THE CONCLUSIONS

Reviewer: 2

Comments to the Author

The methods section still needs to be developed further. In the methods section, please report n= for the different data sets you reference and provide more information about what primary data was collected and how it was collected. - ALTERED TABLE 1 AND CHANGED POSITION

Were photos/videos used as artifact data? (p. 6 line 18) If so, further describe what this is and how it was collected. - REMOVED THIS, WE DID USE IT TO A LIMITED DEGREE BUT THERE IS NOT ENOUGH SPACE TO WARRANT EXPLAINING THIS FURTHER.

Also, Pg 3 line 47 requires a reference. - DONE

Young people and greenhouse gas emissions at music festivals

Abstract

The findings of "Face your elephant", a peer led youth engagement project are presented. This has been operating for over 10 years and has engaged with over 10,000 festival goers at 15 festivals, trained over 100 peer educators in science communication and public engagement skills and helped to change power supply practices of festival organisers in the UK. This long term approach has delivered multiple benefits in terms of raising festival goers awareness of actions needed to address climate change, empowering young volunteers as peer educators and informing festival organisers about the opportunities for greenhouse gas emission reductions.

Keywords: Climate change, Peer education, Public engagement, Greenhouse gas emissions, Energy efficiency, Outdoor events, Temporary electricity, Off grid, Smart grid, Environmental education

Introduction

The project name, "Face Your Elephant" refers to the average UK citizen's annual carbon footprint which is roughly equivalent to the weight of two adult elephants (around 10 tonnes in 2006). The approach combined the peer education experience of national youth charity The Woodcraft Folk with the research outcomes of the Institute of Energy and Sustainable Development at De Montfort University and the visitor engagement activities of the Centre for Alternative Technology. Young

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2
3 peer educators engaged with audiences around the complex issue of climate change in the informal
4
5 leisure setting of a music festival.
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7
8 The Climate Change Act 2008 has committed the UK to an overall reduction of 80% of CO₂ emissions,
9
10 by 2050, from the 1990 baseline. Many industries have adopted targets, including the music
11
12 industry. 3.9 million people are estimated attend music festivals in the UK (UK Music, 2017) and in
13
14 2007, annual greenhouse gas emissions from the UK Music industry as a whole were estimated at
15
16 540,000 tonnes (Bottrill, 2007). The impact of festivals on the natural world is being addressed in the
17
18 UK by non-profit organisations such as Julie's Bicycle, A Greener Festival and EEMusic in Europe.
19
20 Each has developed award schemes related to reducing emissions at festivals and major events. The
21
22 development of ISO20121 for Sustainable Events Management has further raised awareness. Many
23
24 organisers agree that achieving these standards results in economic and environmental savings as
25
26 well as brand or prestige benefits (International Standards Organisation, 2013). One survey showed
27
28 28% of audiences claim to consider a festivals environmental impact when choosing to attend and
29
30 43% claim to have changed their behaviour as a result of green initiatives they had encountered at
31
32 festivals (Challis, 2013)
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35
36 Academic literature on the environmental impact of festivals and events is increasing. In 'Nature and
37
38 scope of festival studies' (Getz, 2010), of the 423 research articles reviewed, only one was found that
39
40 focused on environmental impacts. The same year saw the publication of 'Sustainable Events
41
42 Management' (Jones, 2010) the first textbook on the topic, with the second edition including further
43
44 detail on energy consumption (Jones, 2014). The 'Power Behind Festivals' report (Johnson et al.,
45
46 2013) specifically covered temporary off grid electricity supply for outdoor events, building on
47
48 electricity monitoring work carried out at UK festivals (Fleming et al., 2014). More detailed carbon
49
50 footprint assessments have also been undertaken at Shambala festival (Harper, 2010) and the wider
51
52 field of events management has aimed to become more holistic in its approach, incorporating
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54 measures across environmental, social and economic domains (Fletcher, 2013) (Donovan, 2013). The
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3 London 2012 Olympics, as a leading mega-event (Müller, 2015), was a key driver towards the
4
5 establishment of ISO20121 and Arts Council England, in 2012, became the first arts funding body in
6
7 the world to require regularly funded organisations to measure and act on their environmental
8
9 impacts.

10
11
12 The charity Julie's Bicycle has collected data from festivals since 2011 and produces a set of
13
14 environmental benchmarks for festivals to compare their performance against (Julie's Bicycle, 2014).
15
16 In Bottrill's 2007 estimation, generators were identified as contributing 20,000 tonnes of CO₂e
17
18 around 4% of the total UK Music Industry emissions (Bottrill, 2007). Emissions from diesel generators
19
20 are commonly the largest source of on-site emissions at festivals and the details of electricity use at
21
22 outdoor events is an area that is not widely understood even among events professionals. The
23
24 benchmark for festivals¹ is currently in its third revision with a target of 2.3kg CO₂e emissions per
25
26 audience-day². For a typical three-day festival (6.9kg), these emissions can be conceptualised as the
27
28 equivalent of each attendee driving a medium sized car for around 16 miles (Department for
29
30 Business, Energy & Industrial Strategy, 2016).
31
32

33
34 Face Your Elephant emerged at the intersection of these issues, engaging with people to
35
36 communicate actions they could take to reduce greenhouse gas emissions, for audiences and
37
38 organisers alike.
39
40

41 42 **Methods**

43
44
45 It is relatively challenging to operate public engagement projects over a long period of time. Funding
46
47 bodies often want to support new initiatives rather than provide continuation funding to existing
48
49 projects. Face Your Elephant received funding from different bodies, with slightly different
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51

52
53 ¹ The benchmark is based on data from 13 festivals. All except one were under 20,000 attendance in size. The
54 benchmark excludes audience transport but includes diesel use for generators, landfilled waste and emissions
55 related to water supply and sewerage.

56 ² 1 audience day is equal to 1 person visiting the festival for 1 day. E.g. 1 person attending a festival for Friday,
57 Saturday and Sunday = 3 audience days.

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2
3 approaches over the years. However, the key feature throughout continued to be young peer
4
5 educators engaging with young audiences, supported by advice and guidance from academic and
6
7 communication experts. The project typically concentrated its practical activities within a 2-3 month
8
9 summer period each year although ongoing communications and research continued beyond this.
10
11 Throughout the project, a variety of data were collected for short term feedback and evaluation.
12
13 Over several years this built up a degree of continuity around peer education and working with
14
15 festival organisers to help them achieve greenhouse gas emissions reductions. A synthesis of these
16
17 individual reports, evaluations and papers has been used to describe the key themes relevant for
18
19 other peer education or public engagement projects.
20

21
22 Festival-goers experiences were collected through quantitative surveys collected directly after their
23
24 engagement with the exhibit. A smaller amount of festival-goers also completed a detailed carbon
25
26 calculator estimating their personal emissions. The experience of peer educators was collected
27
28 through quantitative surveys completed at pre-and-post training events. In addition, minute by
29
30 minute data from electricity generators was collected through either installing data loggers or
31
32 accessing the generator providers' online monitoring data. Stallholders and traders at the festival
33
34 were interviewed in later years by peer educators. Although these latter two sources of data were
35
36 central to the projects overall aims and were used to inform exhibit displays and fed back to event
37
38 organisers, the full detail is not included in this paper³ due to the focus on peer education and public
39
40 engagement. Interviews, photo and video records, comment cards, face to face discussions, graffiti
41
42 walls and other methods were also used to engage with people and collect data. Table 1
43
44 summarises the events attended and survey data collected.
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48 **<Insert Table 1 here>**
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55 ³ This detail on electricity related emission can instead be found in 'Electricity-related GHG emissions at off-
56 grid, outdoor events' (Fleming et al., 2014)
57

Project development and funding

The project was developed as a partnership between the Woodcraft Folk, The Centre for Alternative Technology and De Montfort University to engage young people, in a non-school, leisure environment, with practical activities that are fun and that also help reduce greenhouse gas emissions. The activities began with an Energy Saving Trust project as part of the 2001 Woodcraft Folk International Festival in Walesby, Nottinghamshire. Over 5,000 people participated in a two-week long event with Woodcraft Folk volunteers (ages 5 to 25) involved in activities such as building solar electricity systems and solar showers (Harper, 2016). Grants from Awards For All and the Scottish Executive enabled young people to design and build two solar energy trailers; the 500W eco-trailer in Leicester and the 1,000W Powerpod in Edinburgh. Both provided light and power for a range of Woodcraft Folk events.

The Global Village Festival was a two-year project delivering fun, energy-related activities at the two-week Woodcraft Folk festival that took place in 2006 with 4,500 young people (ages 5 to 25) attending. This was funded by the Engineering and Physical Sciences Research Council ([ref: EP/C006429/1](#)). The Festival used the Millennium Development Goals as a focus, specifically: "To increase the awareness and understanding of young people to the actions that they can take to improve environmental sustainability". Practical activities included building solar water heaters and thermal storage, solar electricity systems, wind turbines and electrical storage.

The C-Change project, part of the Department for Environment, Food and Rural Affairs (DEFRA) Climate Challenge Fund, was led by Woodcraft Folk volunteers (ages 11 to 21) with the Centre for Alternative Technology and De Montfort University to deliver a series of engagement events that appealed to young people. This included theatre events, club nights, an exhibit at Woodcraft Folk events and an exhibition at Glastonbury Festival in 2007 (Harper, 2016). The young people involved saw the music festival element as one of the most effective parts of the C-Change project, as it was easier to engage with people one-to-one, in a leisure environment.

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3 Further EPSRC support was secured to deliver this project at music festivals from 2009-2011, ([ref:](#)
4 [EP/G064458](#)) with the support of festival organisers⁴. This led to monitoring and evaluation of
5 electricity consumption of diesel powered electricity generators, (Marchini, 2013) and a Knowledge
6 Transfer Partnership with the festival power supply company Midas UK from 2012-13. Ingenious
7 funding, from the Royal Academy of Engineering (RAEng) enabled the project to continue with more
8 of a focus on the role of engineering and smart grids in 2014 -15.

17 **Key concepts**

19
20 Social Cognitive Theory (SCT) (Bandura, 1986) gives a relevant theoretical basis for the efficacy of
21 Face Your Elephant in peer education and public engagement. This approach was based on the
22 successful Woodcraft Folk work on Mediation Education Support Training Umbrella Project or MEST-
23 UP that has successfully operated at Woodcraft Folk events since the 1990s. Peer educators typically
24 staff a tent with information, books and leaflets where young people can relax and chat while also
25 addressing more serious subjects such as relationships, drugs and peer pressure. The engagement
26 between peers in Face Your Elephant can be described as peer collaboration, high in both equality
27 and mutuality: “[approaches that] seem most likely to generate productive instructional
28 dialogues...encourage joint problem solving, rely on intrinsic rather than extrinsic rewards, and that
29 discourage competition between students” (Damon & Phelps, 1989).

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42 The Face Your Elephant approach built on this experience and worked with young people to engage
43 with their peers and audience members around the actions that they could take to reduce their
44 personal emissions. In earlier years of the project, the peer educators were typically members of the
45 Woodcraft Folk. In later years, the young peer educators also included students from a range of
46 institutions and specifically, in 2014-15, this included a larger number of engineering students. In
47 keeping with Damon & Phelps definition of peer collaboration, the approach was effective

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55 ⁴Festival organisers involved were: Festival Republic (Latitude), Leicester City Council (Big Session and Summer
56 Sundaes) and Kambe Events (Shambala).

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3 throughout with all peer educators, from different backgrounds, engaged in the project. Training
4
5 took place via residential training weekends and practical workshops before the events and morning
6
7 and evening briefings at the events themselves.
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10 Public engagement in the UK has been shaped by the view that: "Direct dialogue with the public
11
12 should move from being an optional add-on... and should become a normal and integral part of the
13
14 [research] process." (House of Lords Select Committee on Science and Technology, 2002). Face Your
15
16 Elephant fitted this general model of public engagement, whereby specialists interact with non-
17
18 specialists, in this case, academics interacting with the general public in order to affect behaviour
19
20 change.
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23 The theoretical approach to addressing behaviour change includes the theory of planned behaviour
24
25 (Ajzen, 1991), the theory of interpersonal behaviour (Triandis, 1977) and value-belief-norm theory
26
27 (Stern et al., 1999) based on norm activation theory (Schwartz, 1977). This suggests that
28
29 environmentally significant behaviour is influenced by a complex combination of variables. These
30
31 variables fall into four broad categories: attitudinal factors (such as norms, beliefs and values);
32
33 contextual forces (such as available time, monetary cost and availability of resources); personal
34
35 capabilities (which include skills and knowledge); and habits, (Stern, 2000a). The influence of each of
36
37 these varies depending on the behaviour in question (Gardner & Stern, 1996) (Stern, 2000b). This
38
39 body of research also shows that while attitudes are one of the antecedents of behaviour,
40
41 nevertheless there are inconsistencies between a person's attitudes and their behaviour, which has
42
43 also been discussed in the literature (Fahy, 2005) (Kollmuss & Agyeman, 2002). This mismatch has
44
45 been referred to as the value-action gap (Barr, 2006) and as Stern highlights, "studies that examine
46
47 only attitudinal factors are likely to find effects only inconsistently, because the effects are
48
49 contingent on capabilities and context" (Stern, 2000a, p. 418). Therefore the Face Your Elephant
50
51 exhibit would play to the strengths of the environment it was situated in and take into account the
52
53 underlying attitudes of the audience. Put simply, young people at music festivals were more likely to
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3 be reached by an exhibit developed by, and staffed with, other young people to fit with the
4
5 environment, types of activities and relevant information for a music festival.
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8 9 **Findings**

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11 Taking climate change as a central topic required a multi-disciplinary approach. The combination of
12
13 peer education experience (Woodcraft Folk), research expertise (De Montfort University) and
14
15 engagement skills (Centre for Alternative Technology) provided the multi-disciplinary approach
16
17 necessary to work with young people. The level of technical knowledge required by the peer
18
19 educators varied and different science and engineering specialisations were represented from
20
21 energy, automotive, civil and mechanical engineering to associated fields such as design and
22
23 environmental management.
24
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26
27 The Peer Educators had to be enthusiastic to talk to their peers about relatively complex science and
28
29 engineering subjects and how this relates to day-to-day life. Their role incorporated catching and
30
31 maintaining the attention of festival-goers, to teach and sell the benefits of actions to festival-goers.
32
33 Their work included low-commitment tasks like setting up solar toys, giving out free pedal powered
34
35 smoothies or solar phone charging. Challenging and high-commitment tasks included constructing
36
37 the marquee and display materials, programming a carbon calculator tool and giving short
38
39 structured seminars. The approach was successful with many peer educators returning over a
40
41 number of years. Some themes the peer educators noted from their own evaluations are
42
43 summarized in Table 2 below:
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46 **<Insert Table 2 here>**
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51 The key aim for all peer educators was to have detailed communications with festival goers. This
52
53 moved beyond general discussion into specific discussion of actions related to personal or national
54
55 carbon reduction opportunities. This required reference to national energy policy, to research
56
57

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3 findings from the UK Energy Research Centre, Zero Carbon Britain and included festival-specific
4
5 discussions centred on hybrid generator performance, demand response and smart grids.
6

7
8 One to one interviews were carried out with peer educators (Wall, 2010) to evaluate their
9
10 experiences. The central factor identified in the project's success was a "Sense of belonging and
11
12 support" which linked to: "Integration of knowledge into engagement activities", "Creative freedom
13
14 in delivery" and "Developed relationships with peers". The peer educators at this time were mostly
15
16 Woodcraft Folk members, so we might assume their relationships may be pre-established and not
17
18 unique to the project. However, during later stages of the project, 2014-15, fewer of the volunteers
19
20 were Woodcraft Folk members and these positive features were still reported by peer educators in
21
22 post-training evaluations (n=32). 86% agreed they had a sense of ownership of the project and 72%
23
24 agreed they had improved their ability to come up with creative solutions.
25

26
27 The overall volume of public engagement varied, with the project expanding to larger events over
28
29 time. At larger festivals of 30,000 or more people, it was possible to engage with about 1,500 people
30
31 in a weekend. At smaller events (500-5,000) the project would be able to engage 500-1,000 people;
32
33 in some cases, practically the whole audience. At one festival of 7,000 people, 17% of the general
34
35 audience recalled that they had visited Face Your Elephant, when completing a separate survey
36
37 about their wider experience (Maughan & Fletcher, 2010). However, the project aimed to focus on
38
39 quality and length of engagement over volume. A team of 20 peer educators staffed the exhibit,
40
41 inside and out, at any one time, therefore there was an upper limit of around 30-40 festival goers
42
43 being engaged at any one time. An average day would see around 300 long (around 10 minutes)
44
45 engagements and double this amount of short (under 10 minutes) engagements. The exhibit was
46
47 typically open for 8 hours per day, from 11am-7pm. The exhibit also attracted a number of experts
48
49 from the general population at the festivals, particularly utilities workers, energy engineers and
50
51 postgraduate students. The engagement strategy was also to try and engage with public figures to
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2
3 encourage them to also promote the work. This included videos⁵ with comedians Marcus Brigstocke
4
5 and Robin Ince, the then UK Secretary of State for Energy and Climate Change Ed Miliband, who
6
7 visited the exhibit at Latitude festival and then MP for Leicester South and Peter Soulsby, who
8
9 attended Summer Sundae as a peer educator for a day.

10
11 Interviews and post-exhibit surveys were key features of the public engagement evaluation,
12
13 beginning with a survey of adults and children (n=198) attending the 2001 Walesby International
14
15 Woodcraft Folk Festival (Devine-Wright et al., 2004). Woodcraft Folk children, compared to non-
16
17 Woodcraft Folk children, felt they had more personal responsibility to conserve energy and use
18
19 renewables, although there was no significant difference between the samples in their awareness of
20
21 the practical steps that could be taken to reduce global warming.
22
23

24
25 The C-Change evaluation (White, 2011) consisted of: a before and after comparison of attitudes, a
26
27 comparison to a national baseline of attitudes and a template analysis of qualitative data collected
28
29 from attendees. This included audience surveys collected at Glastonbury in 2007 (n=124). The results
30
31 showed that general awareness of climate change was high, so interventions should instead aim to
32
33 address attitudes. They suggest future projects should use peer education and fun interventions as
34
35 these had influenced attitudes positively. To acknowledge the fact that people may be confused,
36
37 fearful and concerned, messages should avoid creating negative feelings as these could lead to
38
39 apathy, potentially in both peer educators and the audience.
40
41

42
43 1,361 audience questionnaires were completed in the EPSRC funded part of the project (n=504 in
44
45 2009, n= 857 in 2010). It confirmed that the project attracted a young audience, 80% were younger
46
47 than 30 in 2010. The audience was educated to a similar level as the background population, 30%
48
49 with an undergraduate degree in any subject, and 12% with a degree in a science-related subject. In
50
51 2009, of the respondents who were current students, 33% said as a result of participation they
52
53 would now be more likely to consider a career or further education in science or engineering.
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57 ⁵ Videos of these individuals and the project in general can be seen here: <https://vimeo.com/user4385100>

1
2
3 Overall, the exhibit seemed to reach a very different audience to that of a typical science festival. A
4
5 survey of the Cambridge Science festival found that 62% of the audience (n=957) had an
6
7 undergraduate or higher degree in any subject (Jensen & Buckley, 2012), over twice the level of a
8
9 music festival audience. In terms of age range, 34% were found to be 30 or younger at the science
10
11 festival, whereas this compares to 80% of the music festival audience. Questionnaires completed by
12
13 the audience after engagement with the exhibit in 2014-15 (n=179) showed that most agreed the
14
15 peer educators were enthusiastic and well informed (98% and 94% agree respectively) and a
16
17 significant number claimed they had increased their science and engineering knowledge (68% agree)
18
19
20 Research on electricity consumption at festivals began in 2009. Temporary electrical power supply
21
22 for outdoor events is principally concerned with cost and security of supply over environmental
23
24 impact. Monitoring of generators identified potential greenhouse gas emission reductions of up to
25
26 50% by better sizing and operation of generators resulting in a greatly increased industry
27
28 understanding and new guidance to festival organisers (Marchini, 2013). Electricity generators and
29
30 smart grid data formed a key element of the exhibition and directly linked issues of environmental
31
32 impact to the festival audiences own immediate experience. Addressing the topic of generators was
33
34 a novel issue for the general audience as sites are generally designed to hide these features as much
35
36 as possible. As research detail increased, exhibition materials changed to reflect the particular host
37
38 festival's actual electricity consumption data. This was used to present a case for "smart" systems at
39
40 festivals, with a combination of renewable energy, diesel generator and battery storage combined
41
42 with advice and guidance to users. These "smart" concepts were used to discuss how future
43
44 electricity demand, supply and storage could be developed nationally, in local communities and in
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46 the home.
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Conclusions

The peer education approach increased the knowledge and experience of the young people themselves while also helping them understand the factors that affect attitudes and behaviours of festival goers. They developed a good understanding of complex concepts and were able to work together to explain these effectively to festival goers. Peer educators were challenged outside their comfort zones and found this to be very positive. Several of them now work in the energy and environmental sectors; for example with renewable energy SMEs, Government departments, Energy utilities and NGOs.

The project had a sustained development over a long period of time (>10 years) compared to similar initiatives. The three-part approach of peer education, public engagement and research has been a strength, yet one that has not been without its own challenges due to varying funding requirements and the interdisciplinary nature of the project. It was difficult to measure the lasting effect of the peer education on festival goers, though their characteristics in terms of age and education level suggest that the project reached a different audience compared to a more traditional form of science engagement. Festival goers enjoyed the experience and the relatively complex level of science and engineering was not felt to be out of place at a music festival.

Environmental education at music festivals has traditionally either not been addressed or only targeted at children. We have shown that it can be effectively delivered alongside normal festival activities if the right partners are in place and the peer educators receive the right support and training. The peer education approach, with training and multi disciplinary support from experts can be an effective instrument to discuss and develop environmental policy.

When the project started, renewable energy at outdoor events was relatively novel. Woodcraft Folk now routinely use renewable energy at their events and manage energy demand by encouraging the use of energy efficient equipment. This work contributed to guidance for festival organisers such as the Power Behind Festivals (Johnson et al., 2013) and Sustainable Event Management: A Practical

1
2
3 Guide (Jones, 2014) and helped inform the Powerful Thinking Campaign⁶ that is helping festival
4
5 organisers reduce their energy related carbon emissions.
6

7
8 The implications for Festival organisers are threefold. Firstly the project has shown that it is possible
9
10 to increase people's knowledge of complex science and engineering issues about reducing
11
12 greenhouse gas emissions as part of "normal fun activities"; secondly that face to face discussions
13
14 with peer educators is an effective approach; and finally that festivals can reduce costs and
15
16 greenhouse gas emissions by managing their electrical power provision more effectively, using more
17
18 renewable energy and more hybrid generators.
19

20
21 The findings have implications for environmental education in general in terms of demonstrating that
22
23 long term multi disciplinary partnerships and peer education can help deliver complex messages in
24
25 partnership with key clients such as festival organisers.
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Table 1: Events attended and data collected				
Year / Funding	Festivals	Audience	Numbers engaged	Survey Data collected
2001 Energy Saving Trust	Woodcraft Folk (WF) Sust'n'Able	5,000	1,000	Survey of adults and children: n=198.
2002 EPSRC	WF Venturer camp	500	500	
2005	WF Venturer camp	700	700	
2006 EPSRC	WF Global village	5,000	1,000	Audience surveys: n=446
2007 DEFRA	Glastonbury	150,000	1,000	Audience surveys: n=124
2009 – 2010 EPSRC	Big session Latitude Summer sundae	4,000 30,000 7,000	3,0001	Audience surveys: n=1,361 (See Appendix A) Carbon calculators: n=184
2014 -2015 RAEng	Latitude Shambala	30,000 12,000	3,000	Peer educator before/after training surveys: n=32 Audience surveys: n=179 (See Appendix B) Trader interviews: n=75 Carbon calculators: n=56

Table 2: Peer educator evaluation	
Peers teaching peers:	"I still feel I lack some knowledge in areas but we have a wonderful combination [of people in the group], so I have definitely gained knowledge from the others."
The music festival audience:	"I normally volunteer at a Science Centre, so I thought that I wouldn't find public engagement too hard, as that's what I do there. It turned out to be much harder here. "
Peers (and audiences) going on to further education and work:	"Being involved in the project has enthused me about working in engineering – I previously had a narrow view as to what it would entail" "I talked to a girl who wanted to do engineering or science at university and she found a lot of info really useful for her school studies."
Industry perceptions:	"It has been good to talk about these issues, as they are often neglected in the side of industry I'm in"

Appendix A: Questionnaire template 1

Before starting the questionnaire, are you happy to fill in the following details about yourself: Name, Age, Gender, Email address.

1. Below are a number of terms that relate to the environment. For each one, could you say if you were aware of the phrase before today? (Options: Yes, No, Unsure) Global warming, Climate change, Carbon dioxide, Carbon emissions, Climate change gases, Greenhouse effect.

2. Do you agree or disagree that the world's climate is changing? (Options, Agree strongly, Agree, Disagree, Disagree strongly, Unsure). If you have answered 'Agree strongly' or 'Agree' in the above question, please answer (b) and (c)

2b. To what extent do you think Climate Change is a result of human behaviour or natural changes?(Due entirely to human behaviour, due mainly to human behaviour, due mainly to natural changes, due entirely to natural changes, unsure)

2c. How soon do you think the world, the UK and you personally will be affected by Climate Change (Option to select: the World, the UK, You personally. Options: Already affected, will be affected in the next 5 years, will be affected in the next 6-20 years, will be affected in the next 21-50 years, will be affected in more than 50 years, won't be affected at all)

3. What do you think are the main causes of Climate Change? (Open text)

4. Below are several pairs of words that some people have used to describe their attitude to Climate Change. For each pair, could you tick which word best reflects your own opinion: (Unhopeful/hopeful, Unmotivated/motivated, Positive/negative, Frustrated/Enthused)

5. In the future, how much impact do you think Climate Change would have on the following (Option to select: No impact, a little impact, some impact, a large impact, unsure. Options: Your holidays, your health, your safety and security, the economy in the UK, the weather in the UK)

6a. How much influence do you think the each of the following individuals and groups can have on limiting Climate Change (Options to select: No influence, a little influence, some influence, a large influence. Option: The UK government, Industry & Business, Scientists and engineers, your local community, you personally.)

6b. If you have answered 'A little influence', 'Some influence' or 'A large influence' to the above question please describe steps you can take personally to reduce the effects of Climate Change.

7a. Please describe what you understand by Renewable energy and Energy efficiency.(Open text).

7b. Please give two examples of energy efficiency and renewable energy (Open text)

8. If you are a student would you consider a degree in science or engineering? (Yes or no)

9. Would you consider a job or career in science or engineering? (Yes on no)

10. How would you rate the Face Your Elephant exhibition? (Excellent, Good, Average, Poor)

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11. How might the FYE exhibition be improved? (Open text)

For Peer Review Only

Appendix B: Questionnaire template 2

FACE YOUR ELEPHANT QUESTIONNAIRE 2015

Please mark your highest level of qualification in:					
Any subject:	None	GCSE	A level	Undergraduate degree	Postgraduate degree
A science or engineering related subject:	None	GCSE	A level	Undergraduate degree	Postgraduate degree

	Strongly Agree	Agree	Neutral	Disagree	Disagree Strongly	Don't Know
I better understand the causes of climate change						
I have increased my science and engineering knowledge						
I better understand how I could reduce my carbon footprint						
I know more about science and engineering careers and education choices						
It's important to me that a festival is environmentally friendly						
The volunteer team were well informed						
The volunteer team were friendly and enthusiastic						
I thought the exhibit as a whole was enjoyable						
I thought the exhibit as a whole was well-organised						
I know more about smart grids and smart meters						
I know more about demand shaping						
I know more about hybrid, solar and battery systems						
I know more about energy efficient devices						

3. Please indicate your age	
Under 16	45-59
17-24	60-64
25-29	65-74
30-44	75 or over

4. Please indicate your gender	
Male	Female
Prefer not to specify	
Prefer to specify myself:	

Is there anything else in particular you learned? Please state:

Was there an activity or exhibit you particularly found enjoyable or informative? Please state:

Do you have any further comments about the exhibit?

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For Peer Review Only