

PLANTING HEALTHY AIR IN SCHOOLS PROGRAMME EVALUATION 2019-2020



Christ Church Bentinck Primary School

Planting Healthy Air in Schools (PHA) is a programme delivered by Trees for Cities in partnership with Mapping for Change and Lancaster University. PHA will work with a total of 12 primary schools across London from those found to have the highest levels of air pollution by the Mayor's Air Quality Audit. Our partner primary schools were selected based on those with playgrounds suitable for the installation of green areas (some schools, although highly needy did not for example have sufficient space for such an intervention).

PHA engages with the full school community to raise awareness of the problem of air pollution and the ways that vegetation can help to reduce exposure. We work with the schools to design and plant green infrastructure (GI) - trees, ivy screens, hedgerows - to screen against pollution source(s), and monitor improvements in air quality around the playground. We also spotlight changes in behaviour that can further reduce an individual's exposure to air pollution.

Our objectives for this initial pilot project in 3 schools were to:

1. Raise awareness of the problem of air pollution exposure within the wider school community;
2. Empower schools to improve local AQ through strategically-designed planting in school grounds.
3. Monitor air pollution levels to demonstrate the effectiveness of GI-based interventions to improve AQ in school playgrounds.
4. Encourage behaviour changes (use of green spaces, different routes to school, etc) to further reduce exposure to air pollution.

PHA 2019-2020 SCHOOLS:

Three schools were selected as partners for the PHA 2019-2020 programme:

CHRIST CHURCH BENTINCK (CCB), WESTMINSTER located near the highly-polluted Marylebone Road (A501); of the 213 pupils, 52% receive free school meals and a high proportion are from ethnic minority groups.

In total 2 standard trees, ivy screens and 121 plants in wooden seating planters have been installed. The new seating area has been designed to encourage pupils to spend time in the area of the playground furthest from the road.

TUDOR, BARNET situated adjacent to a petrol station beside the highly-polluted North Circular Road (A406); of the 251 pupils at the school, three-quarters speak English as a second language and 34% receive free school meals.

In total, 4 standard trees, 500 whips and 20.3m of ivy screens were planted around the site, with the intention to screen pupils from pollution from the A406 and to create a re-wilding area for educational use.



Ivy screens at Tudor Primary School, Barnet

WOOLMORE, TOWER HAMLETS located by the Blackwall Tunnel Northern Approach; of the 509 pupils at the school, 91% speak English as an additional language.

In total, 2 standard trees and 4 fruit trees and 3.6m of Euonymus screen were planted. Green spaces, including seating areas, have been created around the playground to encourage outdoor learning and play.

Due to COVID-19 disruptions to the school year, the project was interrupted in mid-March, by which time the preliminary design, engagement and workshops had been conducted at each school, planting had been completed at CCB, Tudor and Woolmore (just), and air quality monitoring was underway at CCB and Tudor (just). However, monitoring was suspended during

lockdown and our planned evaluation was not possible as pupils were not able to complete end-of-project questionnaires for comparison against the baseline data collected at the start. We rely instead on Staff responses, although, again due to the disruptions and pressure in schools leading up to the summer vacation, very few responses were returned. Air pollution data were insufficient at Tudor and Woolmore to draw meaningful conclusions, and our analysis of the impact at CCB is limited.



Woolmore Primary School, Tower Hamlets

SUMMARY OF RESPONSES

Ten members of staff from Christ Church Bentinck Primary (CCB) and five from Tudor Primary completed and returned evaluation forms. No responses were received from Woolmore Primary. Two staff members responsible for the Planting Healthy Air (PHA) project from CCB and Woolmore and 1 from Tudor took part in feedback interviews with TFC staff.

We use the survey and interview data to provide an overview of the school's perception of the project. It should be noted that given the situations in schools at the end of the academic year, it is extremely likely that the responses are highly biased toward those most engaged with the project.

This evaluation considers the responses in three main categories:

- (1) Level of engagement and learning (objectives 1 & 4);
- (2) Evaluation of delivery (objective 2) ;
- (3) Impact (objectives 3 & 4).

LEVEL OF ENGAGEMENT AND LEARNING

Responses were highly positive, with all staff aware of the project at both schools. At CCB 50% of the staff were actively engaged in the planting or air quality monitoring and 1 reporting delivering lessons around PHA. Fewer staff felt directly involved at Tudor (29%) but 3 had included PHA in lesson plans.

80% of staff at both schools were confident that pupils had understood at least some aspects of PHA (greening the playground and air quality), with more confident that pupils understood the air quality monitoring at CCB (unsurprisingly, as CCB received more intensive input and support).

All staff felt that they and the pupils had benefited from the project, mostly around improving the environment in some way (>70% at CCB and >60 at Tudor). A few (~10% at CCB and 20% at Tudor) reported pupils had better understanding of plants and wildlife as a result of PHA, but only 1 member of staff felt that air quality had improved as a result.

Although they may not have seen improvement to air quality as an immediate outcome, both schools were positive (>50% at CCB and 67% at Tudor) that they and the pupils had learned about air pollution and how to reduce their exposure to it. In addition, 44% and 33% of staff felt that PHA had taught them more about plants and wildlife. Only 1 member of staff felt that they had not learned anything new as a result of the project.



Tree planting workshop at Woolmore Primary, Tower Hamlets

“IT WAS FANTASTIC TO GET THE CHILDREN REALLY INVOLVED IN THE PLANTING OF THE TREES AND UNDERSTANDING SOME OF THE SCIENCE BEHIND HOW THEY HELP WITH TRAPPING POLLUTION. THE WORKSHOPS THAT CAME WITH IT, I THOUGHT THAT WAS REALLY REALLY POWERFUL”

“The workshops were considered, you worked really well with us to think about what we could offer our year groups. And the people who were carrying out the work had a really good relationship with the children - that was great.”

“The eco club definitely benefitted from more active involvement. In terms of the monitoring itself I think that was beyond them but they certainly understood what was happening and why we needed to monitor the levels of pollution around the school and what impact the monitoring has on their wellbeing really and the data.”

“I think it could have been better to space out the engagement more. The impact is greater, otherwise it comes and goes and then they move onto something else. And actually you could get the eco club also talking to the children about what they’ve been doing with the collecting of the data.”

“The engagement was good and the eco club got a lot out of it.”

Both schools would like to have more information about the different plants selected:

"I think more could have been done on educating us as a school, as to what plants you could have within your school and the pros and cons of them. Because of our limited knowledge of plants in general, we weren't sure what would be a safe option."

"I would like to label them all as I've forgotten what some are and most of the staff have little-no gardening knowledge."

and to involve parents and the wider community:

"It could have been beneficial to involve parents a bit more. It might have been through questionnaires that were given to them; what would you like to see planted."

"For this to stick with the kids we really want them talking to the parents about it. If the parents are involved in the planting then it's something they can talk to their kids about."

"I think that would have been really beneficial if Trees for Cities involved the wider community to raise awareness."



Air Quality Monitoring with Dr Kirsti Ashworth, Lancaster University

DELIVERY

Staff at Tudor were very pleased with all aspects of the project delivery (100% rating it as 4 or 5), while at CCB 80% reported the same, with 2 respondents feeling that all aspects were only satisfactory.

The members of staff who were interviewed praised the organisation and delivery of the planting:

"I though literally it was fantastic. It was well organised, we had meetings and discussions about how it would proceed. Nothing came as a surprise to us because the emails were back and forth between us. Meetings took place on time, what was said happened."

"I was quite impressed by the staff who were monitoring the volunteers. They were quite keen to make it work for us, quite adaptable."

"All the people who came on site to plant, to design, to organise and come in and do workshops with the children. All that was absolutely brilliant."

"Your team did really well at involving us. There was a good level of flexibility"

"It felt like a good professional relationship to get the best for our school."

"The programme itself in terms of what we wanted, as I said, everything beyond what we could have afforded ourselves was brilliant. We planned together, within a budget. In terms of the programme though, as I said really positive."

There were just a few areas of concern around communication:

"When communicating with parents I felt maybe if there had been some publicity brochures from Trees for Cities, something generic that could be given to different stakeholders like the parents, teachers, governors. Parents are really busy and they just want to see the headlines, something that just summarises the whole project – you know maybe a poster or something quite visual."

"I would say some emails were a little bit micro level; it would have been better to have one every couple of weeks rather than several emails about wheelbarrows."

"Again I think it's about that communication and realising what people have going on in the school."

And around the time commitment and complexity of the air quality monitoring:

"I think that was a bit trickier. I think partly down to capacity at our end if I'm honest and it didn't always happen which is a shame."

"The children enjoyed doing it but it was a complicated process and I'm not sure that they fully understood. They had to be taken out of class and it did take quite a while."

"Obviously the unforeseen issue of Covid. This means that we don't really have the data and it would be good if because of this more monitoring could happen so we can really see if there's been an impact on AQ"

"That would have been challenging for us as a school if we didn't have an additional teacher working in Year 6. We were surprised at the amount of time he had to take away from the class in order to do the role."

"At the beginning perhaps part of the agreement, part of the engagement could be sitting down with the head teacher and saying here's a schedule, here's a structure that we need you to sign-up to and agree to and you need to make sure that your team is able to do this."

IMPACT

Staff were clearly enthusiastic about the potential for good learning outcomes around the PHA project. All of the responding staff at Tudor who are involved in planning lessons intend to include air quality in future lessons; 1 already includes trees, plants and wildlife and the remainder plan to do so. The staff at CCB were not quite as positive, with ~30% of those responsible for lesson planning reporting no plans to include air quality in lessons in the future. However, ~57% of staff at CCB already include trees, plants and wildlife, and the remainder intend to do so following participation in PHA.

The interactive maps were underused by the schools due to the disruption caused by Covid. While CCB received data in time to add to their map, no data were added by Tudor or Woolmore due to timing and issues around air quality monitoring. We are not sure why 4 (of 5) Tudor respondents reported finding the map very useful. Greater integration of the map into the engagement and delivery package is planned for PHA 2020-2021.

It is, however, evident that PHA raised awareness of the issue of air pollution as all staff at Tudor, and all but 1 at CCB reported that they had made changes to reduce their contribution and exposure to air pollution as a direct result of their school's involvement in PHA. Of these, ~60% of

staff at CCB and 67% at Tudor have changed how they travel: using the car less and walking or cycling more. Around one-third of staff reported that they now consolidate deliveries whenever possible to further reduce transport-related emissions. Around half of the staff at each school reported that they had changed their commuting and exercise habits to reduce their risk of exposure to air pollution. One-third of the staff at CCB and 40% at Tudor, actively seek out green space to avoid high levels of air pollution. PHA was always intended to prompt behaviour change, and these examples will be incorporated into our delivery package for PHA 2020-2021.

“You know I think it’s great, really, really great. We’re just looking at our newsletter and reminding ourselves that the planting is great but it’s so much more than that.”

“There were many layers and levels to it and we’ll be able to pick that up again because in September when we have all our children back, we’ll be talking about how we use that area, what the plants are, cleaner air etc. So I think it’s been great.”

“Long term it has made a huge difference to the way the playground looks, it has transformed it. Just being able to sit and appreciate the environment will be one of the luxuries that it provides.”

Both schools felt that more ivy would have been of benefit:

“I did feel that more areas could be covered with the ivy as there were lots of gaps but I understand that this was to do with overall budget.”

“I think in hindsight if money wasn’t an issue I would have had ivy all over the whole of the front of the school. Something to think about for the future”

Both schools commented on the “straw-like” plants, that they assume are grasses but would like to be sure they are healthy.



Woolmore Primary School, Tower Hamlets

CONCLUSIONS

Overall, the responses received suggest the project was successful in delivering learning with 80% of staff at CCB and Tudor reporting the pupils had understood the project. Interviewed staff from all three schools praised the level and delivery of engagement activities and commented on the benefits of actively involving the children in planting and air quality monitoring.

The delivery of the project as a whole was highly regarded, with all three schools reporting positive relationships and interactions between visitors and all members of the school community. The interactive map has the potential to be used as a powerful communication tool once air quality data are available at each school.

Furthermore, most staff see enduring change as a result of being involved in PHA, in particular opportunities for future learning and long-term impact on individual behaviour around plants, wildlife and trees and air quality. However, the most positive aspect of the programme from the schools' perspective was the improvement in the playground environment. The link between air quality and vegetation does not seem to have been strongly appreciated, most likely due to the nature of the monitoring resulting in very few of the school community were directly involved in this aspect of the project, and COVID lockdown ending the monitoring programmes after a very few months.

But I'll leave the final word to the school staff:

"We had a display in school so the parents, staff and children could all see what was going on with the programme. They were keen to know what was going on."

"We had the whole of the February newsletter dedicated to 2020 Cleaner Air Edition and we talked about Trees for Cities."

"We did get beyond what we could have possibly imagined really as a school. The trees, we had two trees planted in the playground and those are flourishing, you know they're growing really well and the climbers within the arches along the wall where you enter the school playground; those are beautiful – they're working really well."

"I mean the parents noticed it straight away when they walked into the building, they were just wow and they could see the difference."

"THANK YOU FOR ALL YOUR TEAM HAS DONE, IT WAS A REALLY GREAT PROJECT AND IT HAS REALLY LIFTED THE SCHOOL."



Oak tree whips Tudor Primary School, Barnet

RECOMMENDATIONS

While the PHA programme was clearly successful, the feedback from schools mirrored our internal evaluation in identifying opportunities for improvement in the organisation and delivery of future PHA projects. These cover four main areas:

(1) School engagement:

- workshops, activities and other pupil involvement should be spread over a longer period;
- more pupils should be involved in air quality monitoring;
- pupils would benefit from sharing their experiences of PHA with each other more.

(2) Air quality monitoring:

- more members of the school community should be involved;
- monitoring data should be made more visible and shared more impactfully;
- the process needs to be simpler and/or better supported;
- the time commitment required from staff should be reduced and made clearer.

(3) Communication and expectations:

- schools requested a single channel of communication from the PHA team;
- and fewer (consolidated) emails;
- schools asked for more consideration of the pressures they are under to deliver a multitude of curricula and pastoral requirements in terms of our expectations of what they are able to add to their workload;
- schools asked for greater clarity up-front of the time commitment for staff and pupils when signing up to PHA (especially raised as an issue around AQ monitoring).

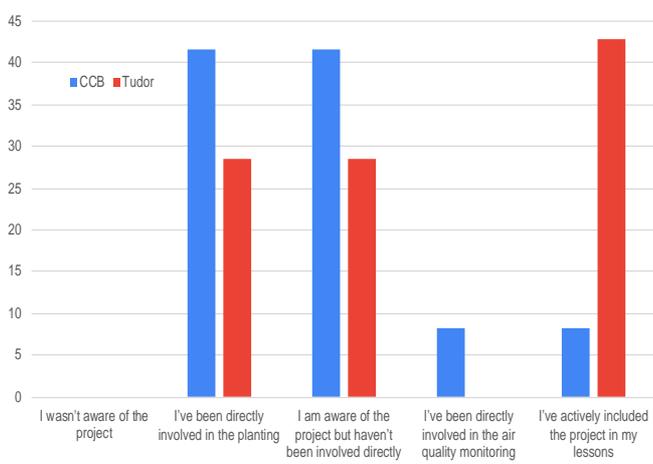
(4) Engaging with the wider community:

- schools suggested that impact and longevity would be increased if parents were directly involved in some of the activities around planting and air quality;
- schools would like clear information (brochure, etc) from PHA team about the project rationale, activities and outcomes for parents, governors, visitors and the wider community.

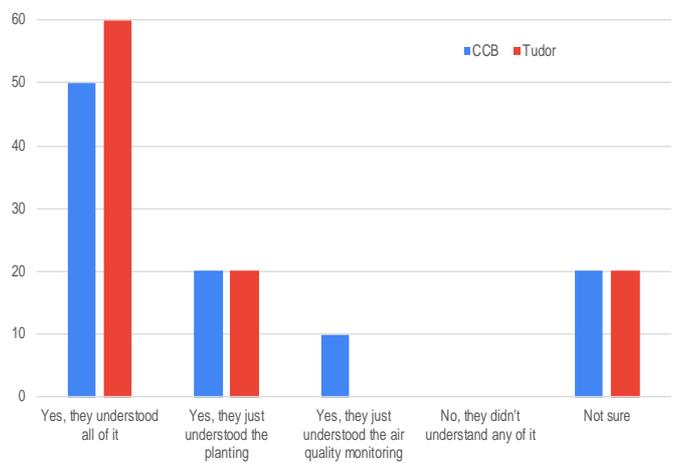
- Better use could be made of the online interactive map of air quality results by sharing with the whole school community through e-news and on the school website, and by displaying the map on the screens at the school reception for pupils, staff and visitors to passively consume information.

SCHOOL STAFF SURVEY RESULTS

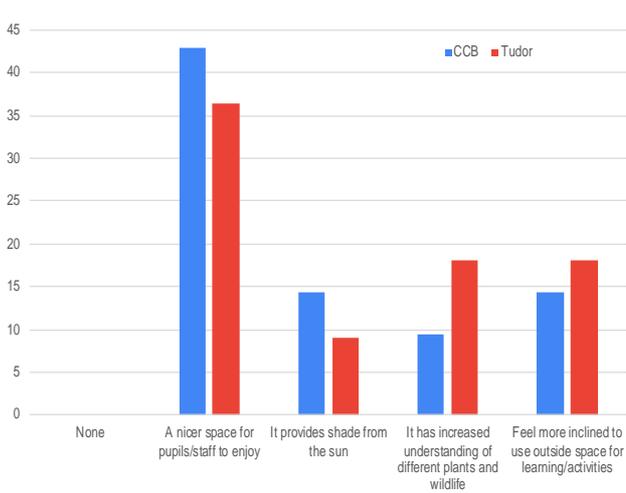
Q1. How involved have you been in the PHA project?



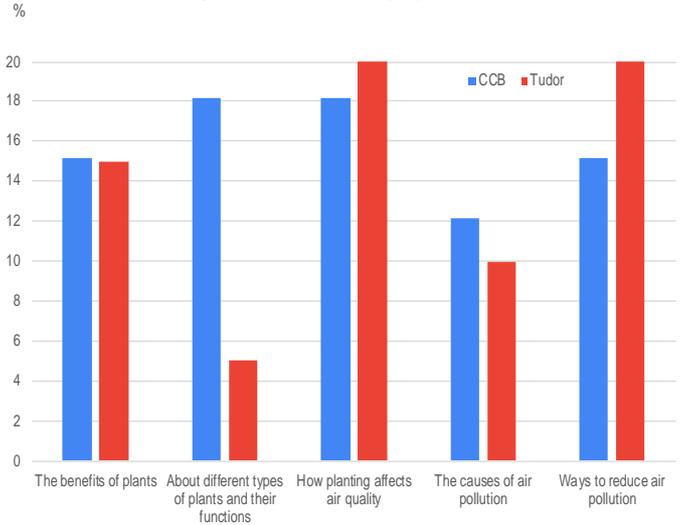
Q2. Do you feel your pupils understood the project?



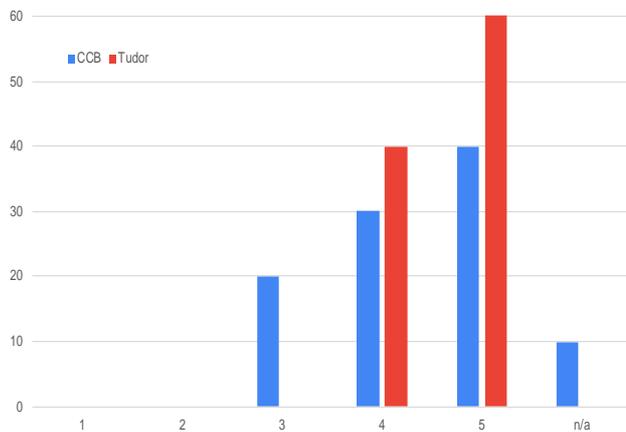
Q3. What benefits have you and/or your pupils experienced from the new planting?



Q4. What have you learned from the project?



Q5. How useful / informative was the school assembly?
(1=not ... 5=very)



Q6. How useful / informative was the staff briefing?
(1=not ... 5=very)

