One Tenth Human and The Dukes Lancaster present

THE ASTONISHING VACUUM CLEANER ADVENTURE

Evaluation Report

In 2018, with support from Arts Council England, we remounted and toured our successful interactive theatrical adventure for children aged 6-10 years old, originally commissioned by Lancaster Arts & Hear Me Roar 2017.

In a co-production between The Dukes Lancaster and One Tenth Human, touring with the support of the Big Imaginations consortium, the show visited 6 venues and gave a total of 21 paid performances (13 family, 8 school shows) to 941 audience members.

The Dukes received support from the Ernest Cook Trust and the Duchy of Lancaster Benevolent Trust to fund the development and delivery of school workshops before and after the show. Freelance artists (trained by Artistic Director Sarah Punshon) delivered 20 sessions in primary schools across Lancashire: 585 children in years 2 to 6 were encouraged to creatively and practically explore Numatic hoovers, hypothesising, experimenting and taking them apart with screwdrivers to see how they work. Two schools also received follow-up workshops with Dr Irene Wise from Lancaster University Engineering Department: 108 students in years 5 and 4 took part in half-day sessions exploring further engineering challenges inspired by the show.

The Show: Audience & Industry Response

The show was well-received, with great feedback from audiences and industry:

> “Absolutely loved it”
>
> “Not only did the children thoroughly enjoy it but I did too!!”
>
> “Pitched just right so that everyone could join in! full of fun and wonder. Thank you!”
>
> (*audience comments from The Citadel, St Helens*)
>
> “I stewarded the show and absolutely loved it. The audience were really engaged and really energetic, the actors were brilliant and interacted really well with everyone in the audience, and the show itself was clever, empowering, and very funny! It was a perfect opportunity for young people to explore theatre and science, to be empowered by theatre, to get involved, and to be inspired by science.”
> *(Emily Armstrong, Z-arts Marketing and Audience Development Manager)*
>
> "I LOVED it. It was a gorgeous show, the kids really bought in to the adventure and were really ready to participate. Great at involving the adults as well. Funny and fast-paced, and actors did really well at keeping a fully interactive story on track, and responding to our very excited audience members!”
> *(Staff comment from The Boo)*

We had estimated 800 audience members, based on achieving 50% capacity. In fact, family shows generally exceeded this target, with several selling out their limited capacity; on the other hand, we had to cancel more than half our schools shows in Lancaster due to difficulties persuading schools to risk their very tight budgets on an unknown title. In Manchester, Z-arts were able to secure a small grant which supported several Hulme

schools to attend: without that support, at least some of those shows would also have gone un-sold. In total we beat our original target, reaching 914 audience members.

> I just wanted to say Vacuum Cleaner Adventure was bloody brilliant!
> Everyone at the Citadel is on the same page that it is the best thing we have programmed here in quite some time.
> My family and friends that I brought along raved about it.
> All good wishes
> *Fay Lamb, Chief Executive, Citadel*

Schools audiences meet the cast at Z-arts, Manchester

Learning Points & Challenges

Schools shows at Lancaster were pitched at £400 per show, which for two classes per show, including a free pre and post show workshop, seemed reasonable. However it was only when we dropped the price to £200 per show that we were able to sell any shows at all. On the other hand, ticket prices for family shows (pitched at £7.50 in Lancaster) were clearly priced well, as shows sold out. Conversations with Big Imaginations venues indicates that schools budget cuts are having significant impact on theatre bookings, even since touring *We're Stuck* in 2017: potentially worrying implications for future planning.

Schools workshops were originally envisaged as happening only in schools who had booked to see the show: when bookings were hard to confirm, we offered the workshops to schools in St Helens and Rossendale via our tour venues The Citadel and Horse & Bamboo. These proved popular, and taking place before the shows in those venues, we believe helped sell family tickets.

Z-arts had originally planned that *AVCA* would be part of their partnership with Tameside Council, with Tameside schools attending: however a Z-arts oversight at booking stage meant that the show was booked during the Tameside half-term. Instead, Z-arts secured a grant to engage Hulme schools, including adding one extra schools show. These schools brought large and energetic groups, and we discovered that there was a breaking point: the show with 67 pupils was extremely difficult for the cast to manage.

Our kinds of show are very challenging to design and budget: having had four previews when we originally made the show, we knew we needed to make some tweaks to the original design. These were very successful: making the route much clearer between the flap at the top of the machine and the chamber where “Hetty” was trapped, meaning that the first interactive challenge (“the holey tube”) was reliably successful.

However, we hadn’t budgeted enough for repairing and making these amends, after a year in storage. We benefited enormously from the expertise and technical support of Dukes staff: many days of in-kind support were given, and free kit loaned for the tour, including a laptop, sound-card, cables and lighting kit. Without this free support, we would probably not have come in on budget. In future we should always allow more for set repairs / refresh on remounts.

The Ernest Cook Trust didn’t grant the Dukes the full amount requested, specifically noting that they wished to fund only the workshops and evaluation, not the production and distribution of printed workbooks. The Duchy of Lancaster were also able to give less than the full amount originally requested. Plans were therefore adapted – see detailed budgets below.

The Ernest Cook Trust have made us aware that they have recently reviewed their grant-giving activity, and in future intend to re-focus on “learning from the land”. Given that their support has been instrumental in the successful development of both our family shows, and that surprisingly few other Trusts support maths or engineering related work with schools and families, this could be a real challenge in future.

The project has enabled a long term partnership with Dr Irene Wise from Lancaster University Engineering Department to be developed. Both the Dukes and One Tenth Human

hope to build on this foundation to create specific STEM related art projects, building on the interest generated from participating schools.

Some of the schools used the experience of seeing the production to support with their delivery of Artsmark & Arts Awards, providing pupils with a nationally recognised accredited arts qualification from Trinity College, London. Bowerham Primary school for example had 25 pupils achieve 'Explore' level of Arts Awards.

We achieved a lot on a very tight marketing budget, coming in under-budget as we were able to re-use the original creative design with very little change, and make use of Dukes in-house expertise rather than pay freelancers. We also benefited considerably from the Dukes in-house Learning team expertise and relationships with local schools, including bringing in a school for a free dress rehearsal, and spending considerable time liaising with venues and freelancers to set up, deliver, and evaluate workshops.

Schools Workshops

Workshops took place in seven different schools, in very different parts of Lancashire.

		% pupils eligible for free school meals	% pupils BAMER
St Peter's, New Church, Pendle	Years 2, 3, 4 and 5 (pre-show)	8%	5%
St Anne's, Rossendale	Years 2, 3, 4 and 5 (pre-show)	27%	16%
Sandylands, Lancaster	Year 4 (pre and post show)	24%	10%
Bowerham, Lancaster	Year 5 (pre and post show)	10%	24%
Rolls Crescent, Manchester	Years 4 and 5 (post show)	37%	71%
St Philips, Manchester	Years 5 and 6 (post show)	21%	78%
Webster Primary, Manchester	Years 4 and 5 (post show)	32%	96%

Workshops were delivered by freelance artists who had received training from OTH Artistic Director, Sarah Punshon. The sessions were based on work done during development of the show – see Appendix 1 for session outlines.

Pupils were encouraged to ask questions, to experiment, and investigate, and to work collaboratively. A selection of Henry and Hetty Hoovers, plus the necessary screwdrivers to take them apart, were brought into school, and enthusiastically taken apart and investigated.

"The workshops were really interesting the schools and children loved them and they combined science and creativity really well. They fascinated the children and really sparked their imaginations."
(Staff comment, The Boo)

“Thoroughly enjoyed by staff and children, fantastic event for all who participated. Learning was very clear and done in a fun and engaging way.”
(Teacher comment, St Anne’s, Edgeside)

The key impacts for pupils listed on teacher feedback forms were:

- Developed scientific enquiry skills.
- Developed independent learning in science.
- Engaged children in science.
- Linked to curriculum objectives.

Two schools, in Lancaster, also received post-show workshops with Dr Irene Wise of Lancaster University Engineering Department. These sessions aimed to build on the excitement of the show to explore specific engineering challenges in a little more depth.

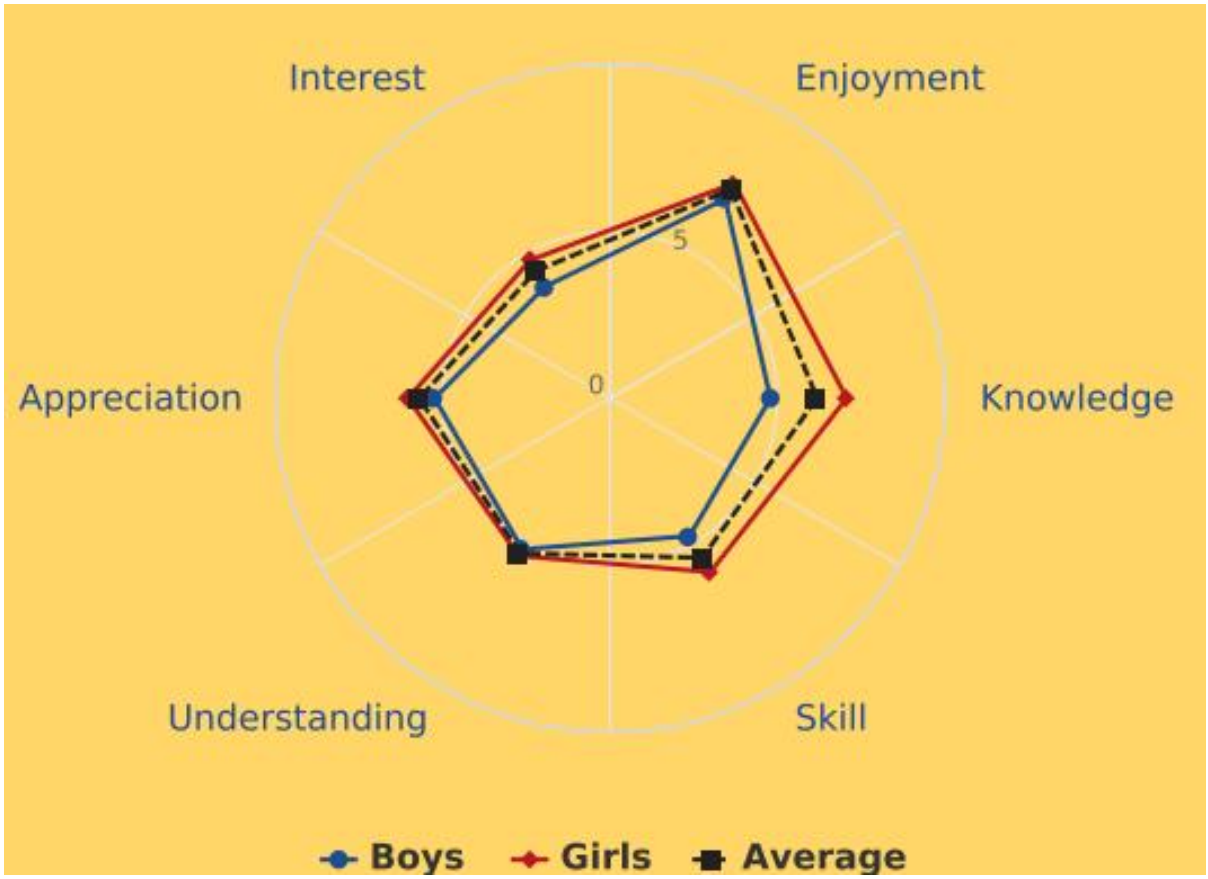
At the end of the show, the characters and audience discuss building a machine to travel anywhere in the universe – usually the children in the audience decided they wanted to go by rocket somewhere. Dr Wise’s sessions therefore asked children to solve the challenge of how to get material safely onto the surface of Mars: children used straws and plasticine, working in teams to create their own solutions to specific engineering challenges.

Dr Wise used the following questions to interrogate the success of the workshops.

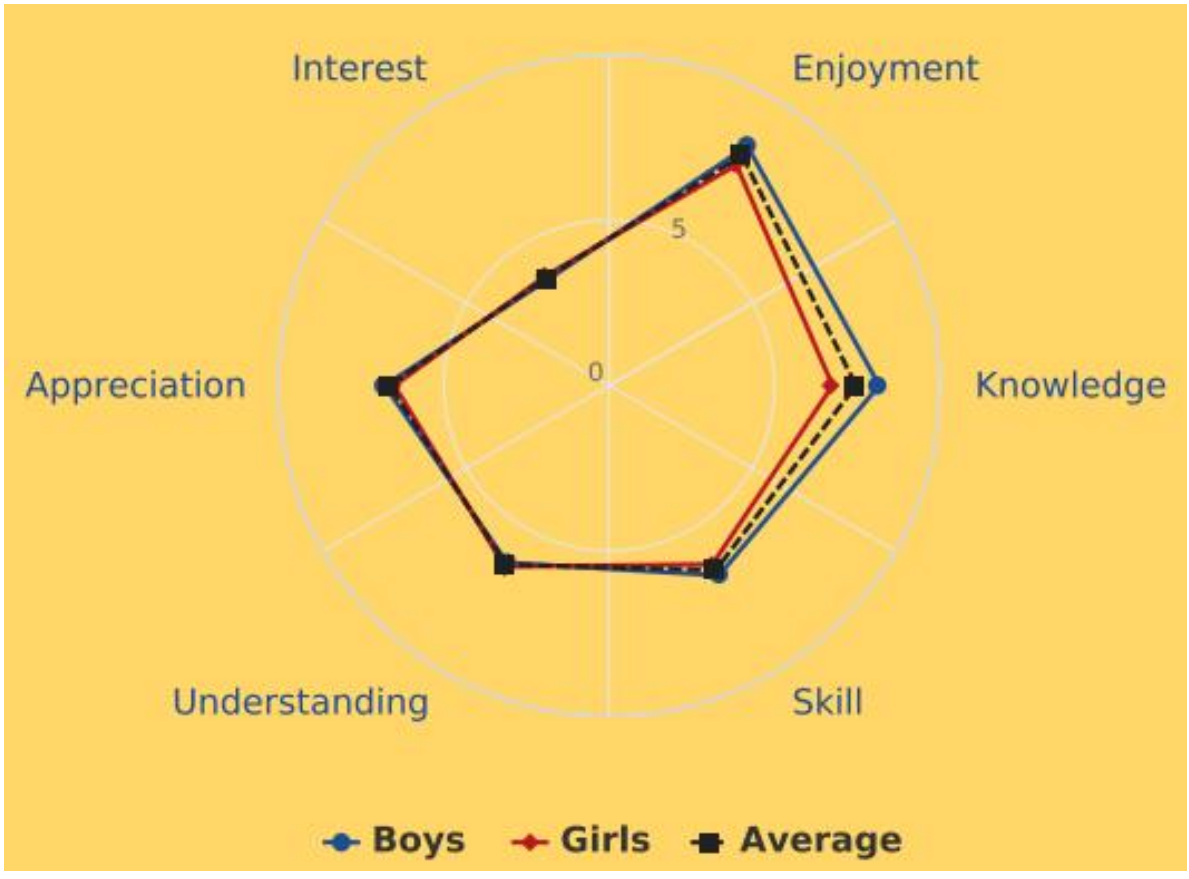
Category	**Question asked**
Enjoyment	How much fun did you have?
Knowledge	Did you learn anything new?
Skill	Did you discover and apply your new skills?
Understanding	How much did you understand about what you did today?
Appreciation	How much do you know about what engineers do now?
Interest	Would you like to be an engineer?

Responses indicated high levels of enjoyment and new knowledge gained from the sessions, including an increased appreciation of what it is engineers do.

Sandylands Year 4:



Bowerham, Year 5:



Interestingly, in both schools, by the end of the session, slightly more girls than boys indicated that they might like to be an engineer (ie answered “Lots” or “A bit” to the final question):

16/30 girls and only 9/21 boys at Sandylands; 14/25 girls but only 13/25 boys at Bowerham.

These are statistically insignificant differences, and may simply indicate that girls are more inclined to want to please the workshop leader. However, the show deliberately featured a likeable mixed-race female character as its lead: it’s a hopeful sign that more than half the girls in each school expressed interest in a future engineering career.

Budget Summary

Income	**Original Budget**	**Actual**
Box office	£6,060	£5,725
Arts Council England project grant	£14,908	£14,908
Ernest Cook Trust grant	£7,246	£4,500
Duchy of Lancaster grant	£957	£500
One Tenth Human funds	£7,000	£6,500
Support in kind (Lancaster University, Z-arts schools liaison, Dukes staff time, equipment and space hire)	£10,182	£10,182
TOTAL	**£47,702**	**£42,315**
Expenditure	**Original Budget**	**Actual Spend**
Creative team fees & expenses	£7,100	£7,398
Actors wages & expenses	£7,308	£8,112
Stage Management & Technical Team wages & expenses	£8,210	£7,232
Physical Production	£1,500	£2,650
Marketing	£1,350	£671
Education Workshops	£8,846	£6,070
Support in Kind	£10,182	£10,182
Contingency	£2,000	0
TOTAL	**£47,702**	**£42,315**

Schools Workshops Detail

Expenditure	**Original Budget**	**Actual Spend**
Dukes Learning Outreach Manager	£1,650	£1,650
Creative Lounge Consultation & room hire	£300	0
Travel	£300	£32
Printing	£36	£18
Hoovers, screwdrivers & other materials	£960	£645
Graphic Design, print & distribution	£1,900	0
Freelance session leaders	£1,500	£1,900
Photography	£350	0
Dukes Artistic Director	£1,600	£1,825
TOTAL	**£8,846**	**£6,070**

Appendix One: Pre Show Workshop Session Plan

1 lead facilitator

two options:

45-60 minute session

90 minute session involving more drama exercises NB extra material for this session is in ***bold italics*** within the main body of the shorter session

Equipment we'll bring with us

- 6 x Henry Hoovers, clean and empty, PAT-tested
- 6 bags of hoover attachments
- 6 small tupperware containers
- 4 Torx screwdrivers per table/hoover
- two extension cables, PAT-tested
- Questions to Investigate sheets (12 per class)
- 4 laminated cards with "Additional Prompts" for adults.
- Post-it notes
- Flipchart paper & blu-tack (if required)
- A box of straws

What we need in the space (classroom or hall)

- 6 tables
- Pencils / pens
- Some scrap paper
- Electrical sockets
- At least two other adults ready to assist (eg teacher and teacher's assistant)

Before session begins:

- Check names of teacher & assistant(s) and that they understand their part in the workshop.
- Check where the most convenient power sockets are for tables, plus one for speaking to the whole class, and whether extension cables are necessary.
- Set up each table with kit.

Session outline

Lead facilitator to whole class: [5 mins *10 mins in longer session*]

- [Turns on hoover and demonstrates.] What's this?
- Yes! Excellent. You're clearly very observant investigators.
- ***Physical warm-up game: creating images/physical movement of hoovers – show me how a hoover works***
- Now, we've had some suspicious reports. We've had reports of *Talking Hoovers.* Have any of you ever heard a hoover talk? Me neither. But I don't think we should relax. We need to investigate this.
- What is investigating?
- What do you use to investigate?
- Interesting. My name is [xxxxx]. I'm from The Dukes / Z-arts. [if relevant: Did you know that [next week] you're going to take part in an interactive adventure at [The Dukes / Z-arts]? It's called *The Astonishing Vacuum Cleaner Adventure*.]
- I'm not quite sure what goes on in this so-called "show" but I'm suspicious. Look what these things are capable of! [Suck up piece of paper with hoover.] Where's it gone? [*inside!*]
- In your tables, you're going to take one of these beauties apart and find out what's going on. You're going to have about 30 minutes to do some experimenting and find out as much as you can.
- On your tables are some Questions to Investigate and a hoover. Off you go, investigators!
- [With help from teacher and assistants, assign a hoover to each table, but don't plug it in yet]

In small groups [15 minutes]:

Questions to Investigate [sheet for kids]

Adults, use the "Additional Prompts" questions as necessary.

Judge the moment to encourage / allow each table to plug in and turn on their hoover.

Additional Prompts – by no means necessary to ask/investigate all of them!

[*if stuck on "invisible things"]* What goes into the hoover down this wire?

What would happen if we were to block where air comes in? Or where it comes out?

What's underneath the top black bit of the hoover? Take it off and see.

Take the hoover tube off the hoover: feel it. Why is it bendy?

Can you hear if you whisper to each other down the tube.

What could you pick up with the hoover?

How heavy an item can we pick up with the hoover? How do we "drop" the item?

What happens if you change the tool on the end? Is the suction stronger or weaker? How could you test that scientifically?

[*if one tool is much weaker than another*] why do you think they designed them like that?

Can you pick up a piece of paper using a straw? What if you use several straws together?

What happens if you open and close the hole in the connector? What do you think would happen if we cut lots of holes in the tube?

What kinds of things could you use the hoover for?

What if it was a giant hoover?

What could you use the outlet for?

What else would it be cool for the hoover to be able to do?

Who do you think designed and made the hoover? What kind of jobs are involved?

Bring whole group back together. Share discoveries and questions. (5 minutes)

- What invisible things go into the hoover?
- Where do things go in?
- What comes out of the hoover? Where?
- Which tools have the strongest suction?
- Did anyone hear any voices from the hoover?

Further investigation of the electrical parts of the hoover, bringing up volunteers to use screwdrivers / feel elements, describe what they can feel, as necessary. (15-20 minutes)

- Open up the black part of the hoover.
- Assign a "screw monitor" who must collect any loose screws.
- Loosen the first four screws, in a square (they don't have to come all the way out)
- Remove top lid; discover copper connections, grease. What is this for, do you think?
- [copper conducts electricity; grease allows smooth movement of the parts]
- Look for three screws in a triangle. WARNING: when we remove these screws and reveal the engine housing, there is a slight risk the metal engine casing will be warm or even hot. Warn children not to touch it.
- Remove the three screws: reveal fan and engine housing.
- Remove rubber protective ring and check heat of engine housing.
- Feel inside the fan, make it move. What does it feel like? The electricity drives this fan, which moves air out, creating a vacuum into which air is sucked…
- Put the hoover back together:
    - replace engine carefully (fits into two grooves)
    - replace rubber ring
    - replace black plastic without cabling in it (line up triangle and square of screws)
    - screw in triangle of screws
    - replace black plastic lid containing electrical cable
    - tighten square of screws
    - replace lid
    - check the hoover works again!

Plenary [5-15 minutes]

So, now you know a lot more about hoovers.

Let's create hoovers physically: show us what you've learned about how it works.

Did anyone hear any talking from inside the hoover? What might it be, talking from inside the hoover? Write down or draw one of your ideas on a post-it note.

Gather ideas on a big sheet.

Wow. You could write stories about one of these things happening.

You've been amazing investigators today. I want to keep track of the investigating skills you've used. I'm going to write them up here. Can you tell me some of the things you did in this session to find things out?

Eg Asking questions, looking, using tools, figuring things out, applying knowledge, using your imagination, listening, testing, experimenting

Amazing. Well done!