











Tactile Collider : Accelerator Outreach to Visually Impaired Audiences

Rob Appleby, The Cockcroft Institute and the University of Manchester, UK <u>robert.appleby@manchester.ac.uk</u>

On behalf of the Tactile Collider team, including Chris Edmonds and Robyn Watson

Science & Technology

Facilities Council











What do we need to do to succeed? Suzie pointed the way on Monday

Superchickens!



Collaborate
Communicate
Innovate

✓ We need <u>diversity</u>✓ We need <u>inclusivity</u>





Why do we need to communicate diversely? <a>Include all possible audience members in our science, our debates and our

discoveries



 Make <u>ALL our own communication in</u> <u>our field</u> better and focused on our audience

✓ <u>Recruit to our field</u>, and involve large new audiences, in what we do







































Visual Impairment

Visual Impairment (VI) is a broad term, with a huge range of impairment and implications.

<u>UK has 2M visually impaired</u> <u>Australia as 0.6M visually impaired</u>

300M world wide (that we know)

These people are not engaged with our science, and we are losing out on a massive pool of talent

@tactilecollider



Who we are!

Tactile Collider is a project developing new models and ways of engagement for underrepresented audiences for science and engineering.



We have worked with visual impairment (VI) experts and consultants for two years to make **new approaches**, **new materials and a touring event** on the LHC and the Higgs boson.

We are touring VI schools and centers in the UK.

We have just won the EPS European outreach prize for 2019!



🕑 @tactilecollider



f@tactilecollider

The guiding principles: The Tactile Collider model

Authenticity **Multi-mode communication** Interactivity **Diverse audience needs** Excessive training and testing **Design and preparation** Not just the kids : CPD and public Science in fun! Even for us



Authenticity



andard Model of





J@tactilecollider

0

5



Multi-mode communication











Interactivity







Diverse audience needs





@tactilecollider





Training and testing











Design and preparation







Teacher CPD – not just for the kids (and the public)









Curious as to how you can make cutting edge STEM research accessible to your students?

Tactile Collider is a project that aims to make science accessible to all, including people with visual impairments. We invite educators to join us for a CPD session looking at how tactile maps, objects, sounds and technology can be used to enhance teaching.

The session will include a brief introduction to the project and the challenges faced by sight impaired students when accessing science. We will introduce the strategies and methods of teaching which allow our audience to fully engage with the concepts.

Delegates will then be able to explore the resources and talk to the team about ways of making lessons inclusive for all.

This session isn't just aimed at teachers of science, it will be of interest to al

J@tactilecollider



The fun....the drama!







f@tactilecollider

These principles work for diverse audiences and for any audience

Authenticity **Multi-mode communication** Interactivity **Diverse audience needs** Excessive training and testing **Design and preparation** Not just the kids : CPD and public Science in fun! Even for us



The origins of Tactile Collider

 I was asked to give a VI inclusive tour of the LHC Collider exhibit in the UK. Nothing existed!





The Tactile Collider experience









CASSIE exploration 3. Acceleration 4. Higgs Conclusions (+ CPD, public)

@tactilecollider

ACTIL

XIX



Evaluation



- Carried out by external group
- Pre/post questionnaire (Likert scale (for recording people's attitude to a topic (e.g. agree, strongly agree)))
- One-to-one interviews
- Observation

@tactilecollider



Evaluation



- 75% of students left with positive attitude towards science
- 73% of students felt they learnt something new about physics

@tactilecollider



Evaluation -Student Perspective

"I really loved talking to the scientists, it was the high spot for me. They were really easy to talk to and encouraging"





Evaluation -Teacher Perspective

"I feel more confident in supporting young people, particularly those with a visual impairment, in science. It has inspired me to be more creative in the way I present science and describe difficult concepts in a way that is easy for pupils to understand"





Evaluation -PhD Student Perspective

"You learn to describe in words what's happening. You learn to be observant, it's an interesting skill we learnt, useful in aspects of your life. It makes you observant, patient and accurate."





^e @tactilecollider

Tactile Collider

We have worked with VI experts, consultants and the audience to produce a new model for engagement with the VI audience. This model created the Tactile Collider event.

We've toured the UK for 2 years, with complete evaluation.

We really want to talk and help anyone interested in making their communication more accessible to VI, deaf, disabled and other audiences. Come and talk to us.

The complete model has been submitted to "Research for All".









