

STEM WITH WINGS

Whats next for Quantum?

Impact Report

Big Ideas | October 2025



IMPERIAL



Introduction

STEM with Wings is now in the second year of delivery, with **What's Next for Quantum?** being the first event of this programme cycle.

Delivered by Big Ideas in partnership with the RAF Youth STEM Programme, the event connected classrooms across the UK to the people and ideas driving innovation in the Quantum field.

Aimed at learners aged 7–14, the event showed that quantum physics is not an abstract mystery, but an exciting, accessible area of discovery that young people can be part of. Through expert discussion and classroom activities, pupils discovered how quantum principles underpin advances in computing, communication, and aviation.

Dr Jess Wade spoke at all four workshops and shared her expansive knowledge of the world of Quantum with students. Dr Wade is a Research Fellow and Lecturer at Imperial in London and is a hugely influential voice in Quantum technologies. Jess was joined by PhD students from Imperial Shey Lovett and Felix Burt who shared practical applications of quantum with students. Big Ideas would like to thank Imperial and QuEST, the Imperial College London's Centre for Quantum Engineering, Science and Technology for their support.



Dr Jess Wade, Research Fellow and Lecturer at Imperial



Guest speaker Shey Lovett, a PhD student studying quantum devices, showed students a quantum computer.

At a Glance

- **7231 pupils** were registered for workshops
- **264 classes** were signed up to attend
- **242 teachers** from **120 schools** across the UK took part in sessions
- **77 homeschooled children** from **34 settings** attended workshops
- **Four differentiated workshops** were held over two days (2 Primary / 2 Secondary)

“They enjoyed the opportunity to create something and think outside of the box.”

Teacher Feedback

“It was great that there was an opportunity to discuss how engineering and science is used across a vast range of industries/contexts - a lot of these actually surprised the students. It was also brilliant that there was a conversation around gender, ethnicity, etc. to show that anyone can be an engineer or scientist, if they wish to be.”

Teacher Feedback

Aims

The event was designed to:

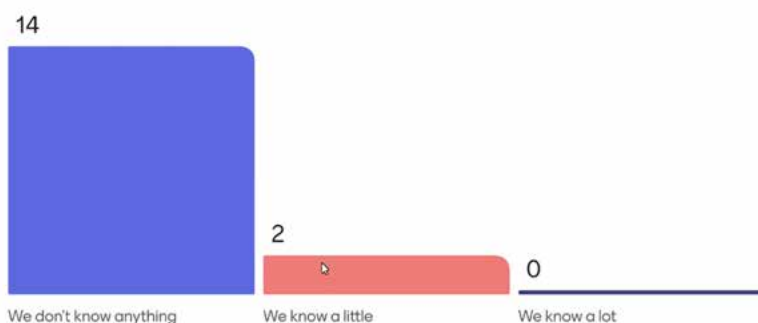
1. Inspire young people to see themselves as future scientists and innovators.
2. Build curiosity and confidence through accessible engagement with quantum science.
3. Connect quantum concepts to real-world applications in computing and communication.
4. Support teachers in introducing new and emerging STEM topics in the classroom.

Wave-particle duality is...

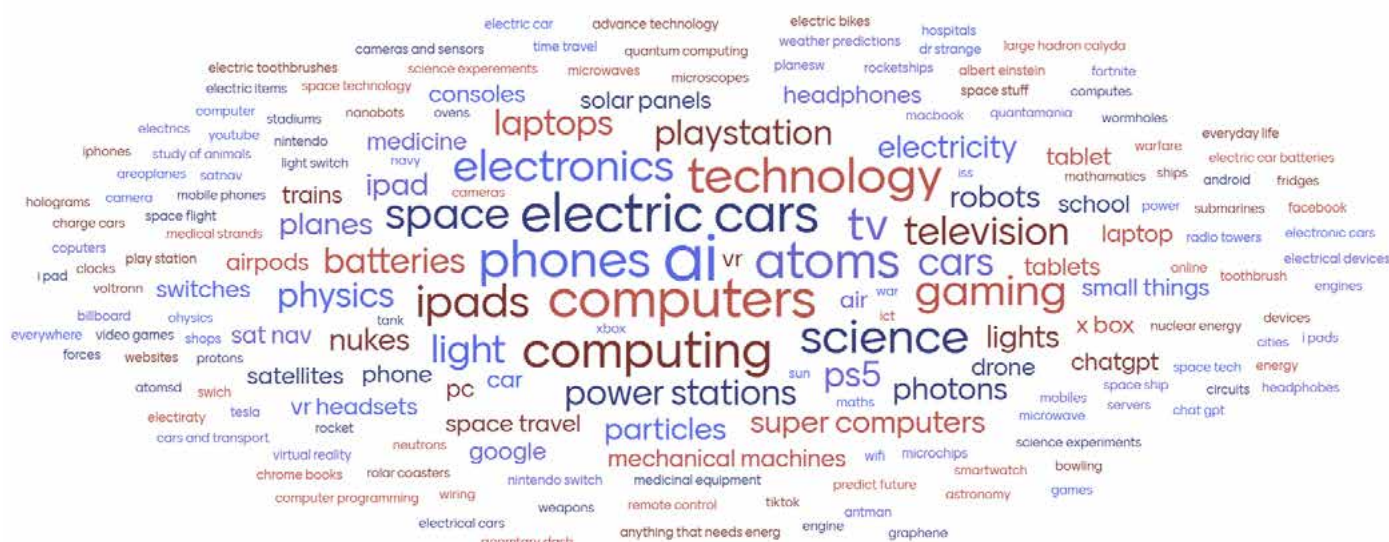
- A. The part-study of wave patterns in dual oceans
- B. That quantum particles can be two very different things at the same time - they can behave like particles (like tiny balls) or like waves
- C. It means that waves and particles have separate, or dual, dimensions in the quantum world and can never ever meet

Guest Speaker Felix Burt, PhD student explains wave-particle duality to students

How much do you already know about Quantum?



Where is quantum technology used?



The Dr Jess Wade and her colleagues shared their experiences from real-world research, illustrating how curiosity and creativity fuel innovation. Teachers praised the balance between explanation and exploration, noting how the session inspired curiosity and confidence among pupils of all abilities.

Teacher Feedback

- **5,820 pupils** aged 7–11 from **89 primary schools**, involving **182 teachers**, **210 classes**, and
- **1,411 pupils** aged 11–14 from **31 secondary schools**, involving **60 teachers**, **54 classes**, and
- **77 pupils** from **34 home education settings**

The map displays the British Isles with 30 blue location pins. The pins are distributed as follows:

- Scotland:** 10 pins (Kirkwall, Elgin, Inverness, Portree, Aberdeen, Dunc, St Andrews, Edinburgh, Glasgow, and a cluster of 3 pins near Glasgow).
- Northern Ireland:** 3 pins (Sligo, Dundalk, Drogheda).
- Ireland:** 5 pins (Dublin, Galway, Limerick, Kilkenny, Tralee).
- Isle of Man:** 1 pin (Dundalk).
- Wales:** 4 pins (Cardiff, Exeter, Plymouth, and a cluster of 2 pins near Cardiff).
- England:** 17 pins (Norwich, Cambridge, Oxford, London, and various locations in the Midlands and South).

The map also labels major cities like Glasgow, Edinburgh, London, and Dublin, and regions like Scotland, Ireland, and England. The English Channel and the Atlantic Ocean are also shown.

Where is quantum technology used?



Quantitative Teacher Feedback

- **100% of teachers** said they would want to take part in future STEM Workshops with Big Ideas
- **76% of teachers** said they were now more confident talking about engineering and science jobs and career pathways with their class
- **65.6% of pupils** met a scientist or engineer for the first time
- **6.5% of teachers** had participated in an RAF Youth STEM event before

Student Question from Meadows Primary School

Teachers described the combination of expert voices, visual storytelling, and interactive tasks as a highly effective way to introduce advanced science concepts at age-appropriate levels. The live format allowed pupils to see real scientists explain complex ideas with clarity and enthusiasm, clarifying abstract principles. Many teachers noted that the session struck a rare balance between intellectual challenge and accessibility, capturing pupils' imaginations without overwhelming them. This blend of expert communication and participatory learning helped students not only to understand key scientific ideas but to feel genuine excitement about exploring them further.

“The concept itself is so fascinating with endless/unknown discoveries yet to come!”

Teacher Feedback

“The students were really engaged in the talk and loved the interactivity of it all too. The discussions we had with the students during and after were really insightful and they all mentioned how much they enjoyed it and would love to take part in another quantum science workshop. When they left, you could hear the positive impact it had on them and they were keen to tell their friends all about it.”

Teacher Feedback

Recommendations

To build on this success, Big Ideas recommends:

1. Continuing the STEM with Wings series to explore other emerging technologies and scientific frontiers.
2. Providing follow-up classroom resources to help teachers embed learning.
3. Expanding interactive sessions with a wider range of scientists and engineers to deepen pupil engagement and inclusivity.
4. Tracking long-term outcomes to assess shifts in confidence and STEM career awareness.

Conclusion

STEM with Wings: What's Next for Quantum demonstrated the impact of creative, inclusive science communication. With 7,308 pupils taking part across over 150 schools and home education settings, the programme proved that even complex scientific ideas can be made engaging and relevant for young audiences.

With teachers reporting across the board that their students enjoyed the event, it clearly achieved its goal of sparking curiosity and confidence. For many pupils, it was their first time meeting a scientist or engineer, a crucial step in widening participation and building aspiration within STEM.

“Quantum physics explains the science of the very very very small, the atoms, electrons and photons that make up everything around us.”

Jessica Wade, Quantum Physicist

Find out more www.big-ideas.org