

Meaningful Learning Experiences

Strategic Commitment	✓	Part of a regional, ESF-funded 'Careers Local' programme
Curriculum Provision	✓	GCSE Physics topic in which 'students always struggle'
Employer Partnerships	✓	Rolls Royce resources and virtual involvement of staff
Reflective Young People		
Informed Career Choices	✓	Showing that Science subjects can lead to careers

Rolls Royce helps GCSE Physics students with the 'difficult concepts' of electric motors

East Leake Academy is located on the Loughborough side of Nottingham and is part of the Diverse Academies Learning Partnership. This project aimed to help year 10 students with learning about, *'Magnetic fields - the shape of fields around permanent and electromagnets'* and *'Motor effect - how does the concept of the motor effect enable an electric motor to convert electrical current into motion that is useful?'* The teacher brief stated that, *'Students always struggle with these difficult concepts - the GCSE course has a lot of content that is also in the A-level course. They have to understand the concept but cannot actually see the magnetic fields'*.

The topic was delivered as a mini project, involving two teaching blocks in one week and volunteer support from staff at Rolls Royce. Students carried out simple experiments in the Physics laboratory to discover the motor effect for themselves. A set of PowerPoint slides produced by a graduate trainee at Rolls Royce described how Rolls Royce has developed electromagnetic motors for use in the marine industry and explained the importance of innovation within the company. Students recorded questions and ideas that were sent to the graduate trainee.

During the final teaching session, students heard that Rolls Royce had just announced development of a vertical take-off flying taxi, which would use electric motors as part of its hybrid power. A message from a Rolls Royce electrical engineer was shown to the students 'live' from the company's stand at the Farnborough International Air Show. Students then viewed an informal video recorded by Emma in which she responded to their questions about working at Rolls Royce.

Benefits for the Students

I am most proud of:

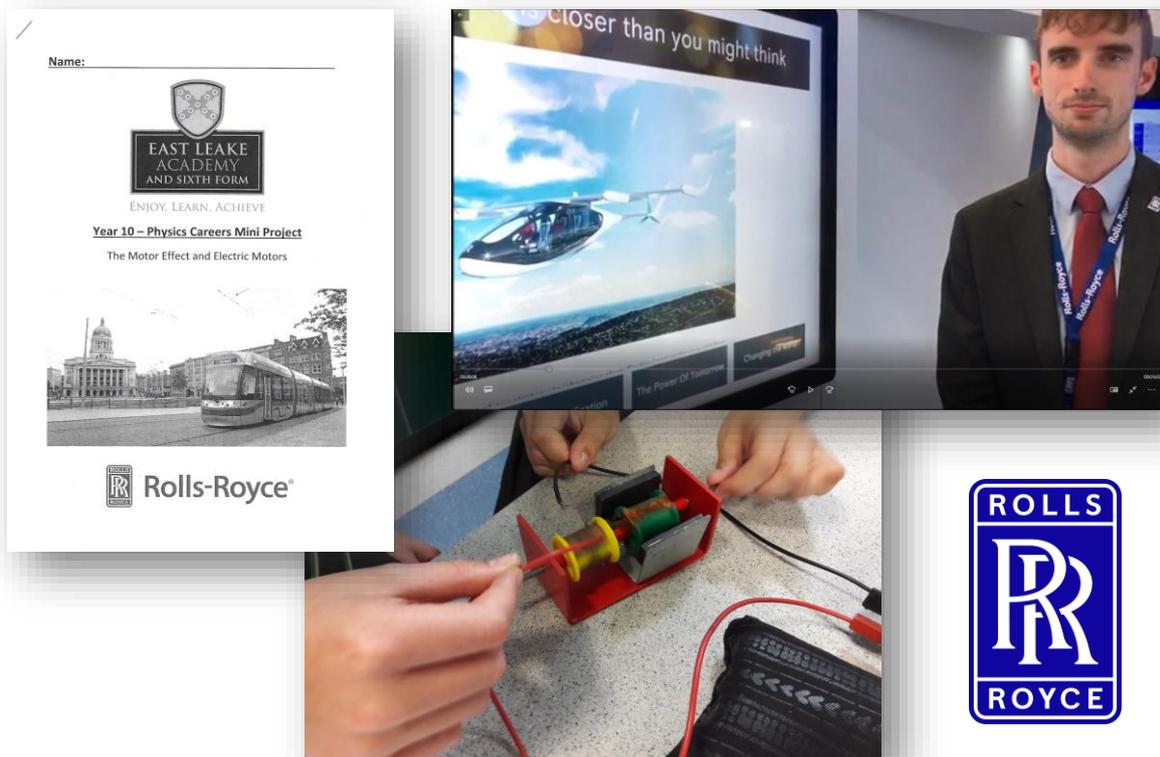
- *'Learning about different options I can take in my future'*
- *'Working as a team to create a motor'*
- *'Working as a team to overcome a challenge and do the task at hand'*
- Student self-assessment data showed, in particular, they enjoyed the experience, developed skills in self-motivation and collaborative working and that the project helped them to, *'Think about my personal choices and future direction'*

Benefits for the School

- *'This has given them a great insight into the 'real world' and how this area of science can lead to really interesting careers'*
- The school's Head of Physics is also an assistant principal with overall responsibility for CEIAG. The project gave him personal experience of seeing how careers can be embedded in the curriculum in partnership with local employers, prior to encouraging similar practice in other subject areas

Benefits for the Employer

- Rolls Royce is one of the 'Cornerstone Employers' identified in the Department for Education's careers guidance strategy
- The company has a network of STEM ambassadors, but most were involved with activities around the Farnborough Air Show when the school chose to run the mini-project
- Virtual involvement of staff gave a 'real world' context for this Physics topic and the whole GCSE group, but without the need for staff to travel or deliver classroom activities



GCSE students are required to learn about electromagnetism and the motor effect. A combination of classroom practical activities and virtual involvement by volunteers from Rolls Royce helped to illustrate how the theory can be used in practice as part of engineering innovation. This included informal feedback from a graduate trainee to questions from the students and information about apprenticeships and other career pathways.