Students’ use of mathematics in science

# Background

* Since 2018 there has been a minimum percentage (10-30%) of marks for mathematics skills on science examination papers (both GCSE and A-level).
* Many students find it difficult to use mathematics in the context of science, with nationally as few as 25% of mathematics marks being awarded on GCSE science papers in 2019 (AQA insight report, 2019).
* These difficulties extend into post-16 and higher education for some students.
* We do not really understand how students bring mathematics and science together in problem solving or why some students struggle far more than others to use mathematics in science.

# Aims

* This project aims to explore how students use mathematics to answer questions in science.
* Better understanding of how students use mathematics in science and the difficulties they have with this will enable teachers to better support their students.

# What would taking part involve?

* Meeting or email correspondence between science teachers or head of science and the lead researcher to identify aspects of mathematics in science which are of particular concern to science teaching staff (optional).
* The lead researcher visiting the school for one day to meet small groups of students. They would be given some problems to work through and discuss as a group. Their discussions would be video and audio recorded.
* We would ideally like 3-4 groups with about 3-5 year 10 or 11 students in each (i.e. up to about 20 students in total). This would preferably include a group from a higher tier class and a group from a foundation class, but this is not essential. Students and their parents would need to give consent. Each group discussion would last up to about 40 minutes. We need students who will be happy to talk to each other as we want to record their discussions.
* The lead researcher would visit the science team to feedback the results of the research and discuss classroom implications (optional).
* The lead researcher would feedback to the students who took part and any others who were interested, either in person or in a short research summary (optional).

# Who would we be working with?

The lead researcher on this project is Dr Vicky Wong. Vicky is an experienced science teacher (most recently in 2022), teacher educator and researcher. She has written textbooks for OUP, education resources for the Nuffield Foundation and the Royal Society of Chemistry, and designed highly regarded CPD for teachers, with some courses she designed running for over 15 years. She has an enhanced DBS certificate.

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# Questions and further details

Please contact Vicky Wong: v.j.wong@exeter.ac.uk