

# Narrowing the Attainment Gap – Helping Disadvantaged Students to Thrive in Science

Monday 06<sup>th</sup> July 2025, 09.00 – 15.30

	a) Primary	b) Secondary	c) Additional options
Welcome and Keynote (09.30–10.30)	James De Winter To narrow the gap, we need a map – Thinking about student thinking		
Workshop 1 (10.35–11.35)	Empowering Every Learner: Practical Ways to Promote Equity and Inclusion (Dr Jo Montgomery)	Science Capital Approach (Jamie Mayville)	Tour of AZ facilities (all welcome)
Workshop 2 (11.40-12.40)	Developing Disciplinary Literacy (Claire Seeley)	Adaptive Strategies in the Science Classroom (Claire Ruthven)	Inclusive Strategies in Primary and Secondary (Eleanor Wylie, IOP)
Workshop 3 (13.30–14.30)	Active Learning Through Effective Practical Work (Claire Seeley)	Disciplinary Language (Lisa Mooney, AQA)	Tour of AZ facilities (all welcome)
Workshop 4 (14.35–15.35)	Embedding Careers in Primary Science Education (Dr Clare Warren)	SEND in GCSE Practical Science (Melanie Marshall AQA)	
15.35 – 16.30			Tour of AZ facilities (all welcome)

## Keynote: James De Winter

### To narrow the gap, we need a map – Thinking about student thinking

Knowing what students think about a scientific idea is critical for teachers but that just tells us where to start. Drawing from work on alternative conceptions, diagnostic questioning and what we know about students thinking and learning in science, this session aims to offer ways for teachers to consider what to do next and support students to (re)construct their understanding. The session will include examples and resources from across the primary and secondary curriculum.

*Formally a secondary school science teacher, James leads the Secondary Physics PGCE and the science part of the Primary PGCE at the University of Cambridge. His main professional aim is to be nice to anyone teaching science.*



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## Workshop Details:

### 1a) Empowering Every Learner: Practical Ways to Promote Equity and Inclusion

Reflecting on the Science Capital Teaching Approach and ASPIRES research, we will explore real, practical strategies, resources, tweaks and techniques that can be successfully used in curriculum design and teaching and learning to promote science identity and build science capital, and why it is essential to address this before the age of 10 to tackle social justice and equity.



*Jo is a qualified teacher and research scientist with more than twenty years experience delivering fun and engaging hands-on science workshops in schools and supporting teacher professional development.*

*Jo is passionate about science, education and young people and aims to make science exciting and accessible to all – to open minds, inspire, engage and develop positive attitudes.*

### 1b) Science Capital Approach

Learn simple, evidence based techniques to engage your students, increase results and uptake at A level sciences by making simple tweaks to your already existing teaching practice. This is done through inclusive, local based contexts to your lessons so that students can not only see the purpose of their learning, but also how it is applicable to their own individual, local everyday lives.

### 2a) Developing Disciplinary Literacy

This one-hour session explores how to develop disciplinary literacy by integrating scientific vocabulary, purposeful reading to learn, and reading for pleasure across the curriculum. With a strong focus on inclusion, it highlights the role of oracy in deepening understanding and supporting learners to articulate ideas confidently.

*Claire Seeley has been a teacher for thirty years. She is also a Primary Science Consultant, providing both continuing professional development and initial teacher training. Claire has a Masters degree in Environmental Education and has a passion for exploring the natural world.*

*Alongside her consultancy work, Claire is a hub leader for Primary Science Quality Mark and leads their RSC Funded Professional Development programme. She is a regional champion for various primary Science education initiatives including The Great Science Share, Explorify and ESERO-UK.*



### 2b) Adaptive strategies in the Science classroom

During this workshop we will discuss the obstacles some students face when learning Science and what we can do as practitioners to help overcome these barriers. We will share and evaluate tried and tested strategies and resources to use in the classroom to ensure that our Science curriculum is accessible to all students. Consider how you can use the ideas shared in your own setting with your own classes.



*Claire has been teaching science and A' Level Biology for over 24 years. She leads the Herts & Essex Science Hub programme, and has recently completed her NPQSL.*

*Passionate about Teaching & Learning, Claire champions STEM education and raising the aspirations of all young people.*

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## 2c) Inclusive Strategies in Primary and Secondary

In this session we'll be exploring ways to engage and support all learners in both primary and secondary using ideas from the IOP's Top Tips for Inclusive Teaching. We'll include some simple, fun physics experiments and using them to see how we can make the learning relevant to student's lives and future jobs.

*After many years teaching Science and Physics, Eleanor now works supporting physics teachers and their teaching in a variety of contexts. She has a passion for making physics accessible and relevant to all and is Education Community Officer at the Institute of Physics.*

## 3a) Active Learning Through Effective Practical Work

In this session, teachers will explore how purposeful practical activities deepen pupils' understanding of primary science. Drawing on research into disciplinary science, it promotes inclusive, accessible "hands-on, minds-on" learning for all learners.

## 3b) Disciplinary Language

This session is designed to help teachers support their students with the words and phrases they need for GCSE science exams. It includes practical tips and strategies to help students speak and write about science clearly and confidently.

## 4a) Embedding Careers in Primary Science Education

This session explores why introducing career-related learning in primary science is essential for broadening pupils' aspirations and challenging stereotypes from an early age. Together, we will examine a range of high-quality resources that help teachers make meaningful links between science learning in school and real-world STEM roles. Participants will critically review these materials and consider how to integrate them into engaging lessons.



## 4b) SEND in GCSE Practical Science

The aim of this session is to support inclusion in assessment and reflect on how adaptations to curriculum delivery can support all learners to succeed in terminal assessments, regardless of their individual need.