

TEACHER WEBINAR

NEW: EFFECTIVE TEACHING OF FIELDS IN A-LEVEL PHYSICS

FOCUS

Fields are a notoriously difficult topic in A-level Physics. The concept of a field dates back to Newton in the 17th Century and then was expanded to include electricity and magnetism in the 19th Century and eventually quantum physics in the twentieth.

Students are challenged by the abstraction of the concept of a field – it is invisible but it fills up the whole of space – and also challenged by the mathematical representation. This has led to performance on the exams being weaker than it could and should be.

This webinar will support teachers in how to identify and tackle the challenges of this topic to learners. Through analysis of the key conceptual difficulties, review of recent examination questions for the topic and teaching strategies to overcome them.

PROGRAMME

	TIME
Introduction, welcome and sound check	4.00 - 4.05pm
The mathematical and graphical representation of a field	4.05 - 4.35pm
<ul style="list-style-type: none"> The concept of a field – exploring how to support students in understanding their representation both algebraically and graphically The difference between scalar and vector fields – strategies to help students recognise difference The graphical representation of a field The calculus underpinning the mathematics of fields 	
Activity	4.35 - 4.45pm
<ul style="list-style-type: none"> Newton and the Gravitational Field: how to scaffold using the field concept to solve astronomical problems Analyse student exemplar responses for field-based questions – mathematical and graphical analysis 	
How to get your students communicating as Physicists	4.45 - 5.00pm
<ul style="list-style-type: none"> Faraday and the Electromagnetic Field: a vital but challenging topic in A level Physics – key points your students must understand The essential scientific terminology The use of precise grammatical forms to express exact meaning The conceptual understanding behind the terminology 	
Activity	5.00 - 5.15pm
<ul style="list-style-type: none"> Einstein and the discovery of the Quantum: helping student come to terms with the abstract concepts of quantum physics Analyse student exemplar responses for field-based questions – explaining concepts 	
Questions & interactive discussion	5.15 - 5.30pm

The mathematical and graphical representation of a field

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- The difference between scalar and vector fields – strategies to help students recognise difference
- The graphical representation of a field
- The calculus underpinning the mathematics of fields

Activity

- Newton and the Gravitational Field: how to scaffold using the field concept to solve astronomical problems
- Analyse student exemplar responses for field-based questions – mathematical and graphical analysis

How to get your students communicating as Physicists

- Faraday and the Electromagnetic Field: a vital but challenging topic in A level Physics – key points your students must understand
- The essential scientific terminology
- The use of precise grammatical forms to express exact meaning
- The conceptual understanding behind the terminology

Activity

- Einstein and the discovery of the Quantum: helping student come to terms with the abstract concepts of quantum physics
- Analyse student exemplar responses for field-based questions – explaining concepts

Questions & interactive discussion

WHY SHOULD YOU BOOK A TEACHER WEBINAR?

- ✓ **Get focused feedback** on the most important areas for improvement for 2020/2021
- ✓ **Take away new approaches** to tackling specific challenging topics that take a different angle
- ✓ **Gain new techniques** for enhancing the performance of specific groups of students
- ✓ **Led by current examiners and academic experts**, giving the best possible advice
- ✓ **Interact and ask questions directly** to the examiner expert leading the webinar

DATE

Thursday 05 November 2020

WEBINAR LEADER

Tony Dunn has taught for over 30 years in secondary schools and sixth form colleges, mainly in inner city areas, specialising in A-level Physics. He was Head of Science for 12 years and spent several years training Physics teachers in SE Asia. He has been an examiner for OCR A-level Physics for the past five years and developed CPD courses, webinars and student conferences for Keynote for over a year.

WHO SHOULD ATTEND?

- Aspiring teachers of A level Physics
- A level teachers of Physics in the first few years of teaching
- A level teachers of Physics seeking to improve their teaching of this topic.

BENEFITS

Teachers will be able to:

- Identify the problems that students have with the topic of Fields
- Examine and discuss good and bad exemplars of examination responses
- Take away successful approaches for teaching the difficult concepts within Fields
- Develop strategies for improving learner understanding of the topic
- Raise student attainment in exams, by improving approach to Fields questions