A new National Curriculum – exciting opportunities and a few challenges for science

Education Show
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Science: what to teach and how to teach it

This session will look at:

• The context
• The difference between the old and new curricula
• Curriculum planning and assessment
• Teaching materials and resources
ASE’s leading role in advising on the new national curriculum

• The UK’s largest subject association
• A dynamic community of teachers, technicians, and professionals supporting science education
Moving forward – the curriculum in practice

Ofsted report ‘Maintaining Curiosity’: a survey into science education in schools. November 2013
An international view

"I don't think you're going to do better in mathematics by just teaching more mathematics; the curriculum as a whole is the driver of outcomes. We also see high-performing countries are not particularly prescriptive in terms of what should be taught. They're very clear about what good performance looks like, what students should be able to do, then leave it up to teachers to decide how to teach."

Andreas Schleicher, OECD speaking to ATL in March 2013

What’s different?

• Science enquiry has been renamed as ‘working scientifically’
• It is not a separate section of the PoS, and it should not be taught on its own
• It is integrated with developing students’ ideas, so they can ask, explore and answer scientific questions
• Emphasis on students asking their own questions, dialogue and making decisions – autonomously, in pairs or groups
• Emphasis on minds-on as well as hands-on activity
• Presents opportunities for real engagement through authentic scientific experiences
Working scientifically –
five approaches from primary science

• Observing changes over time
• Looking for naturally-occurring patterns and relationships
• Identifying and classifying things
• Researching using secondary sources
• Comparative and fair testing
Working scientifically – with more emphasis in secondary

- Scientific attitudes
- Experimental skills and investigations
- Measurement
- Analysis and evaluation
  - Start to use modelling and abstract ideas to develop and evaluate explanations
Underpinning working scientifically

• Emphasis on using and applying mathematics knowledge of concepts and skills in collecting, presenting and analysing data – including use of simple statistical techniques

• Emphasis on developing and using scientific and technical terminology accurately and precisely – building an extended specialist vocabulary, including the use of scientific nomenclature and units, and mathematical representations
Working scientifically – measurement, using and applying mathematics

- Glossary of key terms
- Investigations illustrating use of terms in context
- Consistent with terminology used by professionals
- Supported by Awarding Organisations
Working scientifically – outdoors

• An emphasis on fieldwork, as an integral part of practical work and working scientifically
• Building on the big primary focus of using your local outdoor environment to name and identify living things, to collect data, such as observing plants growing throughout the seasons, variations in day length and temperature during the year, exploring how local gravestones have changed over time, or making a guide to local living things
• Use SCORE benchmarks to audit your access to outdoor space http://www.score-education.org/media/11758/score_benchmark_secondary.pdf
Supporting resources and networks

ASE’s journals will be packed with background and useful support in 2014
What else is different?

There are more connections between subject disciplines of biology, chemistry and physics and the big ideas underpinning scientific knowledge and understanding.
What should be done about this?

And more practical help.....
Preparing for the changes

• Use the new science National Curriculum as an opportunity to improve science teaching and learning in your school
• Audit your existing scheme of work for science and how science is taught (and assessed) in your school
• Get support and guidance from ASE. Look out for ASE courses, conferences and publications that help to prepare for the new National Curriculum. Make use of the expertise in ASE that has helped to develop the new KS1 - 3 science PoS
Preparing for the changes

• Focus on getting to grips with the full range of working scientifically (including practical work) and understanding how students will progress
• Frameworks for analysing and evaluating the effectiveness of practical activities
• Support for departmental planning and professional development
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Thank you for listening – any questions?

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