BEST Evidence Science Teaching

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• A new curriculum package for teachers of 11-14 science
• Drawing on the best available research evidence about science education
• Incorporating best available thinking on areas seen as important in shaping student’s attitudes to science
Issues and challenges of 11-14 science education

• Purposes of the 11-14 science curriculum
• Progression in learning and assessment of learning
• Student engagement
• Pedagogy and teaching support

What evidence is there?
PURPOSES OF 11-14 SCIENCE EDUCATION
Purposes of science curriculum 11-14

• What key science ideas should be included?
• What about (practical inquiry) and the nature of science?
• How does 11-14 curriculum fit in with what comes before and what comes after?
Purposes – seminar responses

- 11-14 science should not just be a filler between primary school and GCSE courses
- Needs to engage and enthuse students
- Develop knowledge and understanding of the ‘big ideas’, including the nature of science
- Provide opportunities for authentic practical inquiry
- Develop scientific literacy – science is for all
- Careers – related contexts
Purpose - is there evidence?

Evidence or opinion?
PROGRESSION IN LEARNING AND ASSESSMENT OF LEARNING
Progression in learning and assessment of learning

- What does progression in learning look like?
- What counts as effective assessment?
- What do you do with assessment, how do you report it?
Progression and assessment – seminar responses

• Year 6 – Year 7 transition is problematic in teaching
• We need clear descriptions of the progressions through the key ideas
• Need good assessment items to monitor progression
• Need resources to identify and deal with misconceptions
Progression – the evidence
Assessment – the evidence

“There is a body of firm evidence that formative assessment is an essential feature of classroom work and that development of it can raise standards.”

(Inside the black box p.19)
STUDENT ENGAGEMENT
Student engagement

• How do we stimulate student’s curiosity?
• What can we do to help students feel science is relevant to them?
• How do we encourage more students to want to study science beyond the compulsory period?
Engagement—seminar responses

• Start with student’s interests
• Use a variety of real world contexts
• Use historical contexts to show how science explanations develop and change as new evidence becomes available
• Be aware of diversity issues in providing contexts
Engagement – some evidence

• Pupil’s enjoyment of science increases when context-based materials are used
• Context-based materials help pupils see the link with everyday lives
• Interest and enjoyment of lessons involving context-based materials does not appear to translate to a widespread desire to study science further

PEDAGOGY AND TEACHING SUPPORT
Pedagogy and teaching support

• What resources do teachers need to plan and implement a curriculum?
• How can teachers be supported using their professional knowledge and judgement?
• What sort of support is needed for specialist and non-specialist teachers?
Pedagogy and teacher support – seminar responses

• Resources:
  – relevant and linked to the curriculum
  – focused on teaching enduring science ideas – not aligned to specific curricula
  – include cultural and historic references

• Developing pedagogy:
  – CPD needed to bring about change
  – create a culture in which teachers have the time and support to learn new approaches
Pedagogy – the evidence
Keep in touch with UYSEG

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References (1)


References (2)


