Science Education in Transition

(seeking an intelligent design)

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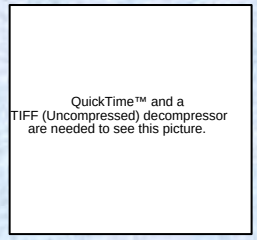


QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Are we losing the plot? Surely not.

Both sides the Tweed - some personal observations.

Electric current

Class size

Innovation

Culture

Teachers

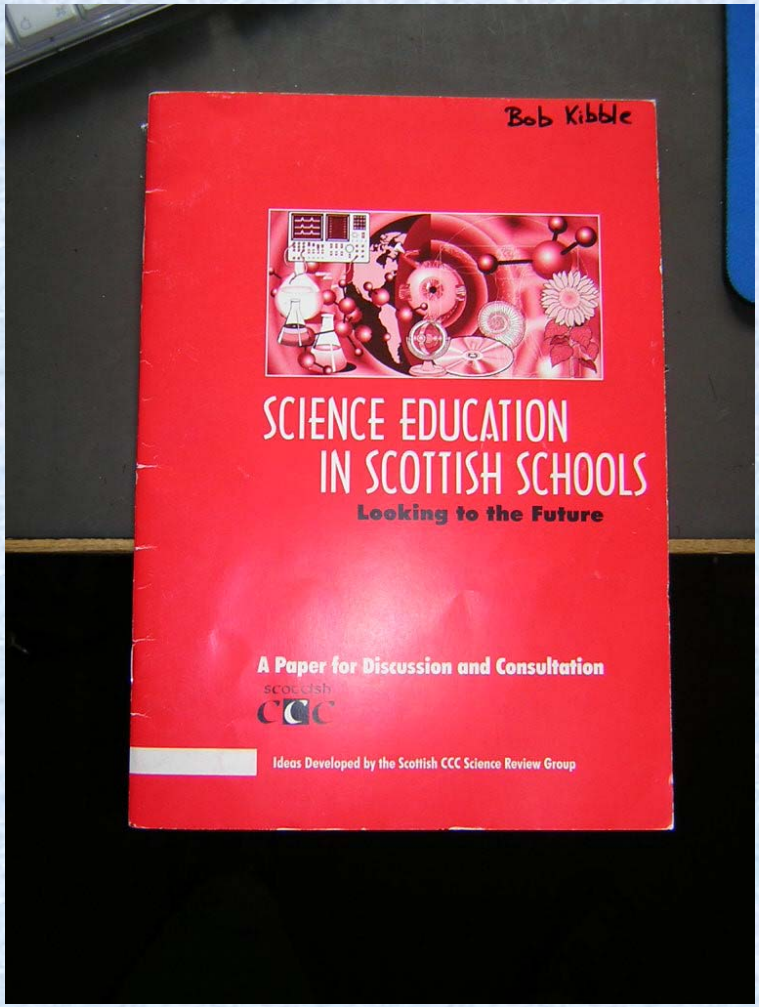
Assessment

Courses

The critical question..

What, which

Why science education?



1996

‘The overall goal of science education should be scientific capability…

Scientific competence

Scientific understanding

Scientific creativity

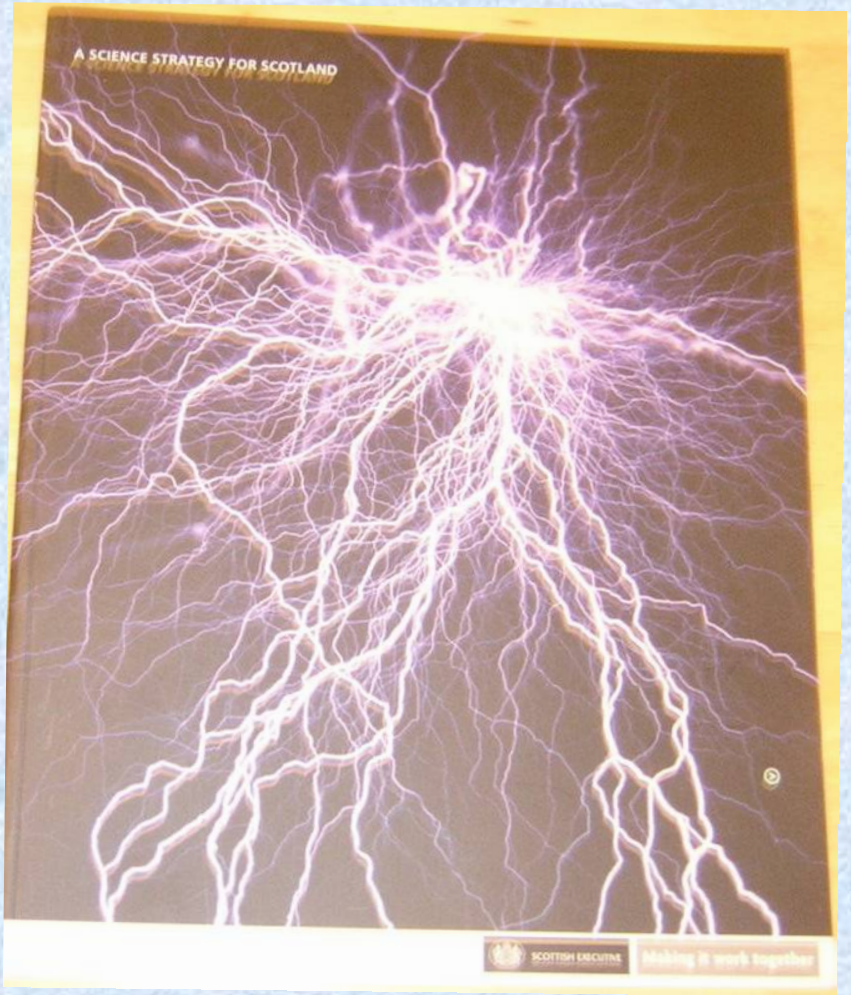
Scientific sensitivity

Scientific curiosity’

1998

‘The science curriculum 5-16 should be seen primarily as a course to enhance general scientific literacy’

‘ The structure needs to differentiate more explicitly between those elements designed to enhance scientific literacy and those designed as the early stages in a specialist training in science… so that the requirement for the latter does not come to distort the former.’



Science education has two objectives:

- To lay the foundation for Scotland's future scientists
- To give everyone the skills and confidence to act as informed and questioning citizens in relation to scientific issues

2001

SATURDAY 16 SEPTEMBER 2006 THE SCOTSMAN

Drugs for Parkinson's disease turn patients into gambling addicts

A lightbulb was labelled '230V, 60W'.

a. When in normal use how much energy does the bulb transform each minute?

b. What does it mean to say that a lightbulb is 'inefficient'.

c. If two such bulbs were connected in parallel across a 230V supply,

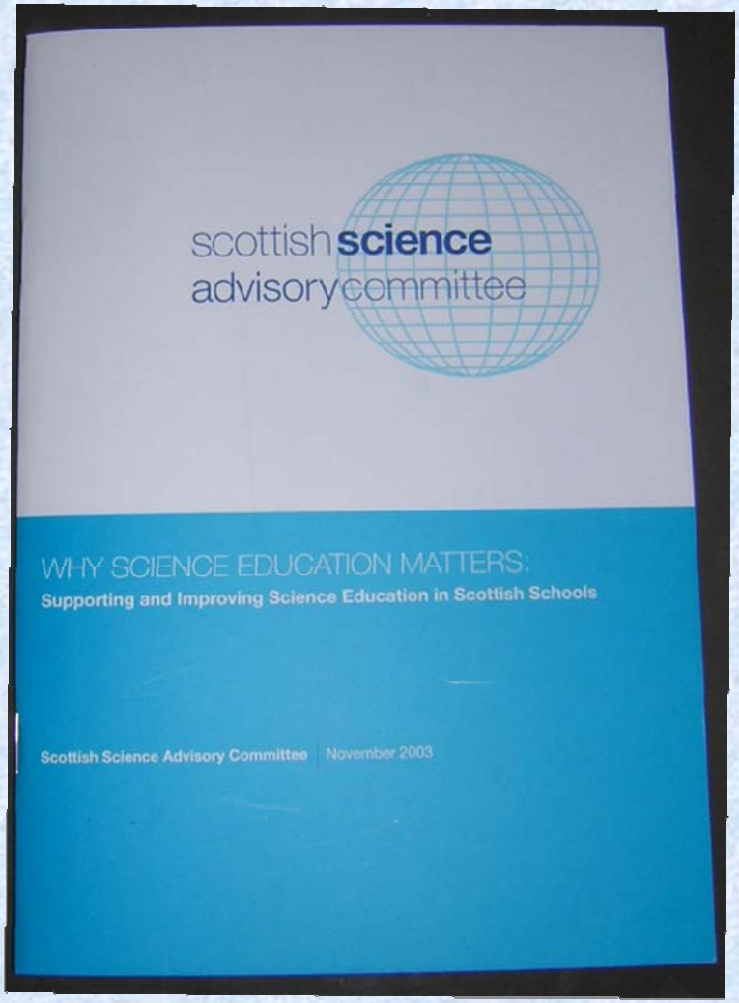
what would be the power output of each bulb?

2003

Recommendations include:

- To rethink the purposes of science education

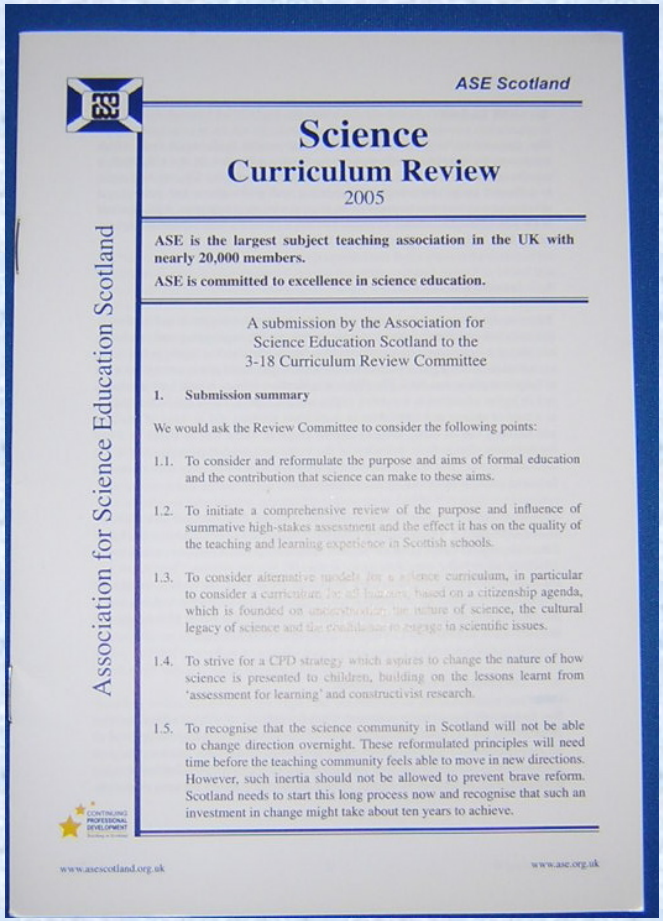
- To share models for a new science education - with teachers, parents employers and politicians.



2003

Recommendations:

- a prioritised, less crowded, flexible set of curricula
- a science for citizenship course post 16
- include ethical, environmental and social issues



ASE Scotland

Science
Curriculum Review
2005

ASE is the largest subject teaching association in the UK with nearly 20,000 members.

ASE is committed to excellence in science education.

A submission by the Association for Science Education Scotland to the 3-18 Curriculum Review Committee

1. Submission summary

We would ask the Review Committee to consider the following points:

1.1. To consider and reformulate the purpose and aims of formal education and the contribution that science can make to these aims.

1.2. To initiate a comprehensive review of the purpose and influence of summative high-stakes assessment and the effect it has on the quality of the teaching and learning experience in Scottish schools.

1.3. To consider alternative models for a science curriculum, in particular to consider a curriculum for all learners, based on a citizenship agenda, which is founded on understanding the nature of science, the cultural legacy of science and the confidence to engage in scientific issues.

1.4. To strive for a CPD strategy which aspires to change the nature of how science is presented to children, building on the lessons learnt from 'assessment for learning' and constructivist research.

1.5. To recognise that the science community in Scotland will not be able to change direction overnight. These reformulated principles will need time before the teaching community feels able to move in new directions. However, such inertia should not be allowed to prevent brave reform. Scotland needs to start this long process now and recognise that such an investment in change might take about ten years to achieve.

Association for Science Education Scotland

www.asescotland.org.uk www.ase.org.uk

2005

Recommendations on:

- The 'why' question (purposes)
- Assessment
- Curriculum models
- CPD
- 2010 - 2012

2006

‘We support a more relaxed and adventurous approach to assessment in schools’

‘Changes which substantially reduce the assessment burden. . . less detailed orientated exam papers.’

‘Move away from mainly factual material . . . to (that which) consolidates understanding and develops skills.’

The ROSE Survey in Scotland – An Initial Report

Views of Secondary 3 Pupils on the Relevance of Science Education

August 2006

A Report from STEM-ED Scotland

supported by

The Scottish Executive
Enterprise, Transport & Lifelong Learning Department

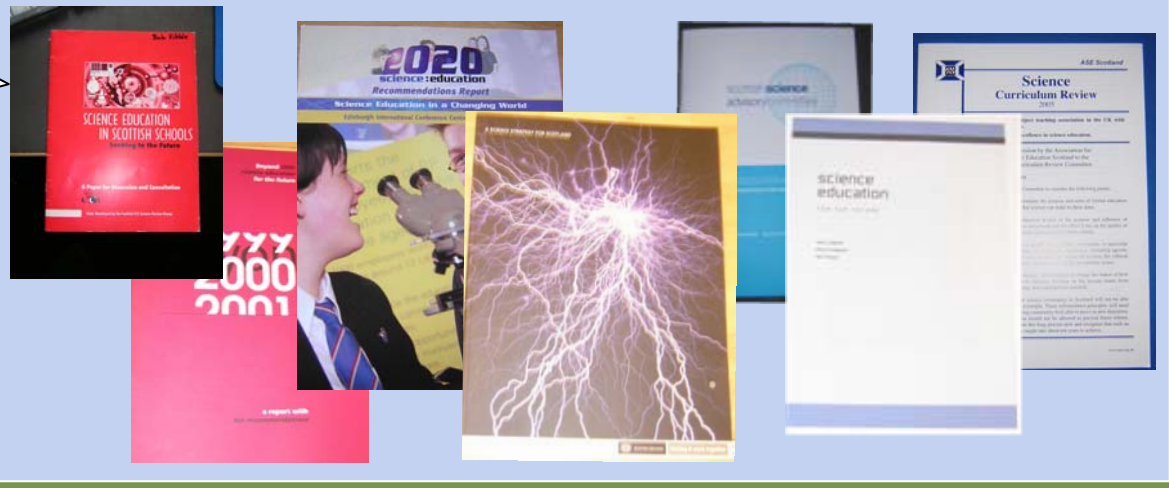
2006

For most pupils, their attitudes towards the experience of school science are predominantly negative.

A Curriculum for Excellence

Don't worry, here comes the cavalry.

Science Education in Scotland



successful learners

with

enthusiasm and motivation for learning
determination to reach high standards of achievement
openness to new thinking and ideas

and able to

use literacy, communication and numeracy skills
use technology for learning
think creatively and independently
learn independently and as part of a group
make reasoned evaluations
link and apply different kinds of learning in new situations

confident individuals

with

self respect
a sense of physical, mental and emotional wellbeing
secure values and beliefs
ambition

and able to

relate to others and manage themselves
pursue a healthy and active lifestyle
be self aware
develop and communicate their own beliefs and view of the world
live as independently as they can
assess risk and take informed decisions
achieve success in different areas of activity

To enable all young people to become

responsible citizens

with

respect for others
commitment to participate responsibly in political, economic, social and cultural life

and able to

develop knowledge and understanding of the world and Scotland's place in it
understand different beliefs and cultures
make informed choices and decisions
evaluate environmental, scientific and technological issues
develop informed, ethical views of complex issues

effective contributors

with

an enterprising attitude
resilience
self-reliance

and able to

communicate in different ways and in different settings
work in partnership and in teams
take the initiative and lead
apply critical thinking in new contexts
create and develop
solve problems

Some questions.

1. Has the drive for a new science curriculum been sidetracked by ‘A Curriculum for Excellence?’

2. Who is taking the lead on:

- changes to the assessment regime?
- alternative models for a science curriculum?

3. Has anyone bought the tickets?

4. Will we be here in 2012 asking the same questions?

Is there anybody listening?