

**Developments
completed, initiated and
in the pipeline**

England & Wales
and Scotland

E&W: phases

- Five Key Stages:
 - 1 & 2 at primary level
 - Key Stage 3: 11-14 years
 - Key Stage 4: 14-16 years
 - Key Stage 5: post-16
(A-level, vocational BTEC)

E&W: completed

KS3

**National Strategy in English, Maths, Science
and ICT (Information & Communications
Technology)**

E&W: Implementing

KS4: GCSE in Science from September 2006

- major focus on *How Science Works*
- emphasis on discussion and debate
- requiring the articulation of informed opinions
- changes to assessment (improving practical skills and hopefully reducing coursework plagiarism from the internet)
- examination boards permitted to interpret the reworked National Curriculum criteria

Organisms and Health

-) organisms are interdependent and adapted to their environments
-) variation within species can lead to evolutionary changes and similarities and differences between species can be measured and classified
-) the ways in which organisms function are related to the genes in their cells
-) chemical and electrical signals enable body systems to respond to internal and external changes, in order to maintain the body in an optimal state
-) human health is affected by a range of environmental and inherited factors, by the use and misuse of drugs and by medical treatments

Chemical and Material Behaviour

- a) chemical change takes place by the rearrangement of atoms in substances
- b) there are patterns in the chemical reactions between substances
- c) new materials are made from natural resources by chemical reactions
- d) the properties of a material determine its uses

Energy, Electricity and Radiations

-) energy transfers can be measured and their efficiency calculated, which is important in considering the economic costs and environmental effects of energy use
-) electrical power is readily transferred and controlled, and can be used in a range of different situations
-) radiations, including ionising radiations, can transfer energy
-) radiations in the form of waves can be used for communication

Environment, Earth and Universe

- a) the effects of human activity on the environment can be assessed using living and nonliving indicators
- b) the surface and the atmosphere of the Earth have changed since the Earth's origin and are changing at present
- c) the solar system is part of the universe, which has changed since its origin and continues to show long-term changes.

Separate Sciences

additional content

- Biology
 - a) Cells and growth
 - b) Energy flow and element cycles
- Chemistry
 - a) Structure and bonding
 - b) Chemical synthesis
- Physics
 - a) Forces and motion
 - b) Nuclear changes

Assessment objectives

- Knowledge and understanding of science and how science works
- Application of skills, knowledge and understanding
- Practical, enquiry and data-handling skills

Key Skills

- communication
- information and communication technology
- application of number
- improving own learning and performance
- working with others
- problem solving.

Implications

- ☹️ A plethora of specifications
- ☹️ Too much choice?
- ☹️ Parity across the examination boards?
- 🕒 Reduced content
- 🕒 How Science Works is underpinned by *Work Related Learning* (statutory work placement) and *Citizenship* (statutory GCSE examinable half-course)

E&W: In the pipeline

- Post-16: new specifications as from 2008

A drive by one international examination board to make courses more rigorous, reduce repetition with the hope of engaging more students

Could this increase the uptake of the sciences at university?

- KS3: reworking the National Curriculum criteria

Scotland

“Our aspiration is to enable all children to develop their capacities as **successful learners, confident individuals, responsible citizens and effective contributors to society.**”

A Curriculum for Excellence challenges us to achieve this aim. It establishes clear values, purposes and principles for education from 3 to 18 in Scotland.

How can schools achieve these purposes?

- the environment for learning
- the choice of teaching and learning approaches
- the ways in which learning is organised

Thank You

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Lyn Haynes
ASE International Committee