

National Curriculum and Assessment in England

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Outline

- The Education Reform Act 1988
- Task Group on Assessment and Testing (TGAT)
- The National Curriculum in England
- Science in the National Curriculum
- Practical work in science
- The impact of TIMSS and PISA
- Evidence-based policy-making

The Education Reform Act 1988

- The National Curriculum
- Local management of schools
- Grant maintained schools
- City Technology Colleges
- Open enrolment to schools
- Polytechnics removed from local authority control

Rationale

- Education Reform Act (1988)
 - An early attempt to use markets to reform education
 - Choice
 - Diversity
 - Standardization
 - Information

Key features of ERA

- Basic curriculum:
 - Religious education
 - Core subjects (English, Math, Science)
 - Non-core subjects (7 in all)
- Four “key stages” (5-7, 7-11, 11-14, 14-16)
- Core subjects assessed at end of each key stage
- Other subjects assessed at some key stages

Task Group on Assessment and Testing

Chaired by Paul Black (1987)

Recommended for all subjects:

- Teacher assessment moderated by ...
- external testing - Standard Attainment Tasks (SATs)
- 10 levels of attainment

Task Group on Assessment and Testing (TGAT)

- A basic choice, either:
 - Age-dependent
 - “benchmark” assessments at each age-point
 - Age-independent
 - linked system of achievement levels across ages
- Crucial factors
 - Technical feasibility
 - Impact on students

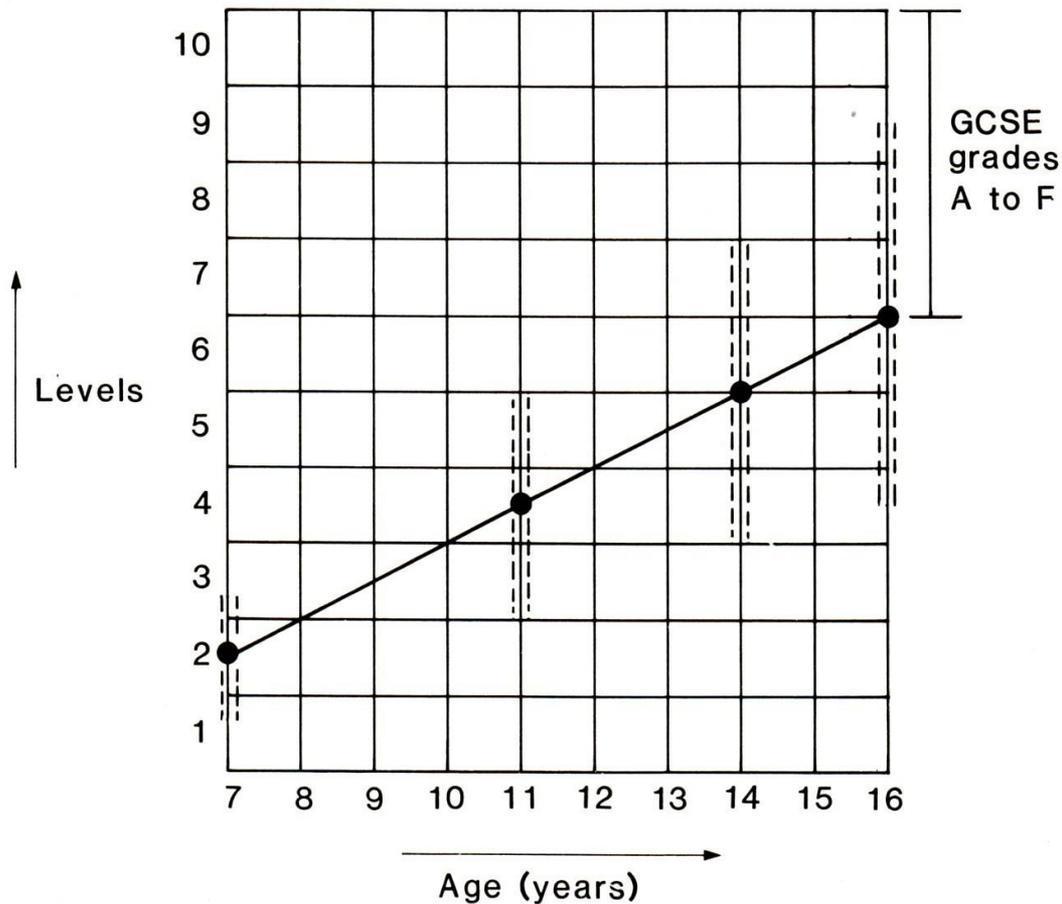
Age-dependent levels

- Simple to understand
- Familiar
- Significant negative impact on student motivation
- Encourages a notion of ability as “fixed” rather than incremental

Age-independent levels

- In psychology
 - Piaget (Shayer et al., 1976; Shayer & Wylam, 1978)
 - Pascual-Leone
 - Case
 - SOLO (Biggs & Collis, 1982)
 - Van Hiele
 - CSMS (Hart, 1981)

The TGAT model



Stage	Ages	Levels
1	5-7	1-3
2	7-11	2-6
3	11-14	3-8
4	14-16	4-10

Assessment remit

Attainment Targets: clearly specified objectives for what pupils should know, understand and be able to do in terms of knowledge, skills understanding and aptitudes. Age-related, catering for children of different abilities and levels of maturity

Programmes of Study: the content required to enable pupils to reach or surpass the ATs. Detailed description of the content, skills and processes that all pupils need to be taught, set within an overall or outline map of the curriculum

Proceed from PoS to AT, developed iteratively

The National Curriculum in England

- A highly specified curriculum
- A strong system of external assessment linked to strong accountability

The National Curriculum Science Working Group, 1987/1988

- Chair: Jeff Thompson
- 2 - 3 academics
- 4 - 5 teachers (primary and secondary)
- 2 headteachers (primary and secondary)
- 2 local authority advisers
- One science curriculum specialist
- One industrialist
- One Her Majesty's Inspector (HMI)

1988-91 National Curriculum (NC) and Task Group on Assessment and Testing (TGAT)

- TGAT model of assessment : proposed loose criteria, progressive (levels), formative, by teachers, moderated
- NC science had 22 (then 17) attainment targets (ATs) with 10 levels of attainment at four key stages (KS)
- GCSE exam boards reject this as unmanageable
- National Curriculum testing at KS1 ,2 & 3 by teachers runs into criticism
- NC science reduced to 4 ATs
- National Curriculum testing at KS1,2 & 3 becomes a combination of written tests (SATS) and teacher assessment (for ‘practical work’)

Hierarchies in science

1. Know that light comes from different sources
2. Know that light passes through some materials and not others, and that when it does not, shadows may be formed
3. Know that light can be made to change direction, and that shiny surfaces can form images
4. Know that light travels in straight lines, and this can be used to explain the formation of shadows
5. Understand how light is reflected
6. Understand how prisms and lenses refract and disperse light
7. Be able to describe how simple optical devices work
8. Understand refraction as an effect of differences of velocities in different media
9. Understand the processes of dispersion, interference, diffraction and polarisation of light

AT13 Energy

Programme of Study	Attainment targets Pupils should:
<p>Key Stage 1 Children should consider the food they eat and why they eat them</p>	<p>Level 1 Understand they need food to be active</p>
<p>Key stage 2</p>	<p>Level 2</p>
<p>Key stage 3</p>	<p>Level 3</p>
<p>Key stage 4 Pupils should have the opportunity to investigate the way energy is transferred in a variety of contexts ...</p>	<p>Level 4 Know that there is a range of fuels used to provide energy</p>
	<p>Level 7 understand energy transfer by conduction, convection and radiation</p>
	<p>Level 10 be able to use the principle of conservation of energy to explain energy transfers</p>

Versions of the NC for Science

- 1989 (22 attainment targets)
- 1991 (4 attainment targets)
- 1995 (slimmed by 20%)
- 1999
- 2004
- 2006
- 2008
- 2013

Practical work in the NC

- 1989 NC order: AT1 as one of two profile components (the other had 16 ATs). Called ‘The Exploration of Science’ it had a strong investigative emphasis
- 1991 Revised NC: Sc1 which incorporated AT17 as the ATs were reduced to 5 and then 4. Called ‘Scientific Investigation’, the model was strong on variable handling
- 1995 Dearing Review results in a simplification of NC and Sc1 becomes ‘Experimental and Investigative Science’
- 2000 Revised NC incorporated additional material ‘ideas and evidence’ in Sc1 and became ‘Scientific Enquiry’
- 2005 KS4 revision with AT1 as ‘How Science Works’
- 2008 KS3 revision to match that at KS4

The impact of TIMSS and PISA

- When the early versions of the NC were created, there was little international comparative data available – now there is much, including PISA, TIMSS and comparative studies such as those of Robin Alexander, Andy Green and Bill Schmidt
- Other nations (e.g., Hong Kong) have shown the value of international benchmarking
- Ministers favoured this approach because of concerns that the UK is being overtaken by other runners in the race.

The impact of TIMSS and PISA

“We have sunk in international league tables and the National Curriculum is substandard. Meanwhile the pace of economic and technological change is accelerating and our children are being left behind. The previous curriculum failed to prepare us for the future. We must change course. Our review will examine the best school systems in the world and give us a world-class curriculum that will help teachers, parents and children know what children should learn at what age.”

Michael Gove, Secretary of State for Education, 2011

Evidence-based policy-making

- Be realistic: if **compelling** evidence is not available, policy will be decided on judgement
- Be ready: evidence takes years to assemble, but elected politicians need results within 1 – 4 years
- Be robust: some evidence is more compelling than others
- Be flexible: **pilot everything**
- Be alert: for unintended consequences.