The Primary Review

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INTERIM REPORTS

Research Survey 4/I

STANDARDS AND QUALITY IN ENGLISH PRIMARY SCHOOLS OVER TIME: THE NATIONAL EVIDENCE

Peter Tymms and Christine Merrell
University of Durham

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UNIVERSITY OF CAMBRIDGE
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STANDARDS AND QUALITY IN ENGLISH PRIMARY SCHOOLS OVER TIME: the national evidence

Primary Review Research Survey 4/1

Peter Tymms and Christine Merrell

October 2007

This is one of a series of 32 interim reports from the Primary Review, an independent enquiry into the condition and future of primary education in England. The Review was launched in October 2006 and will publish its final report in late 2008.

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A briefing which summarises key issues from this report has also been published. The report and briefing are available electronically at the Primary Review website: www.primaryreview.org.uk. The website also contains Information about other reports in this series and about the Primary Review as a whole. (Note that minor amendments may be made to the electronic version of reports after the hard copies have been printed).

We want this report to contribute to the debate about English primary education, so we would welcome readers' comments on anything it contains. Please write to: evidence@primaryreview.org.uk.

The report forms part of the Review's research survey strand, which consists of thirty specially-commissioned surveys of published research and other evidence relating to the Review's ten themes. The themes and reports are listed in Appendices 1 and 3.

This survey relates to Primary Review theme 4, **Quality and Standards**.

The authors: Professor Peter Tymms is Director of the Curriculum, Evaluation and Management (CEM) Centre at the University of Durham. Dr Christine Merrell is Project Manager at the CEM Centre, University of Durham.

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STANDARDS AND QUALITY IN ENGLISH PRIMARY SCHOOLS OVER TIME: THE NATIONAL EVIDENCE

Abstract

This survey concentrates on changes in standards and quality in English primary schools. 'Standards' are taken to mean the levels attained rather than the levels which are set as expected. 'Quality' is taken to mean a judgment about the level attained against an implicit or explicit view of what is appropriate. Levels of academic attainment (mathematics and reading) form the mainstay of work which has been carried out, and of this review, but seven separate areas are set out which form a complete structure for monitoring, of which academic attainment is just one part.

Generally, mathematics and reading standards have remained fairly constant for some time although both have risen recently. Reading has risen very slightly and mathematics has risen moderately.

A plea is made for a more thorough evaluation of education initiatives and their impact on standards, and for linked cost benefit analyses.

Introduction

As the title indicates, this report is concerned with standards in primary education and it is as well at the outset to be clear about what we mean by that. The word can take on more than one interpretation. On the one hand, standards can be thought of as a level against which one tries to make a judgement. In high jumping terms that would be the height of the bar and the observations of individuals trying to jump over it. In educational terms it would involve ascertaining how many people met or exceeded a certain criterion, but another way of looking at standards is to take them as the level that one has reached. How high can an individual jump? It is that way of thinking about standards which is used in this report.

Educational standards and judgements about the quality of those standards can be approached by starting with a description of children. Such an approach might begin with what pupils know and can do when they start primary education, and then be followed with a description of how this progresses as they age. It might also include how their perceptions and attitudes change, as well as other variables. The educationalist can then be left to come to his or her own judgments about quality. Some may argue that the process of schooling is a vital part of quality and that standards and quality should be judged against processes. They would be quite right in pointing to processes as being at the heart of education but in the last analysis, in order to assess that quality, one must look at impact and therefore at change in children. And, of course, anyone's judgment about quality must involve making decisions, explicitly or implicitly, about what standards are expected or appropriate in order to decide whether what is seen is good or poor. In fact, whenever one makes judgments about quality or standards one makes them against a reference point. There will always be a comparison. This might be a comparison of change over time, or against other countries, other schools or against personal expectations, but the judgements are always comparative.

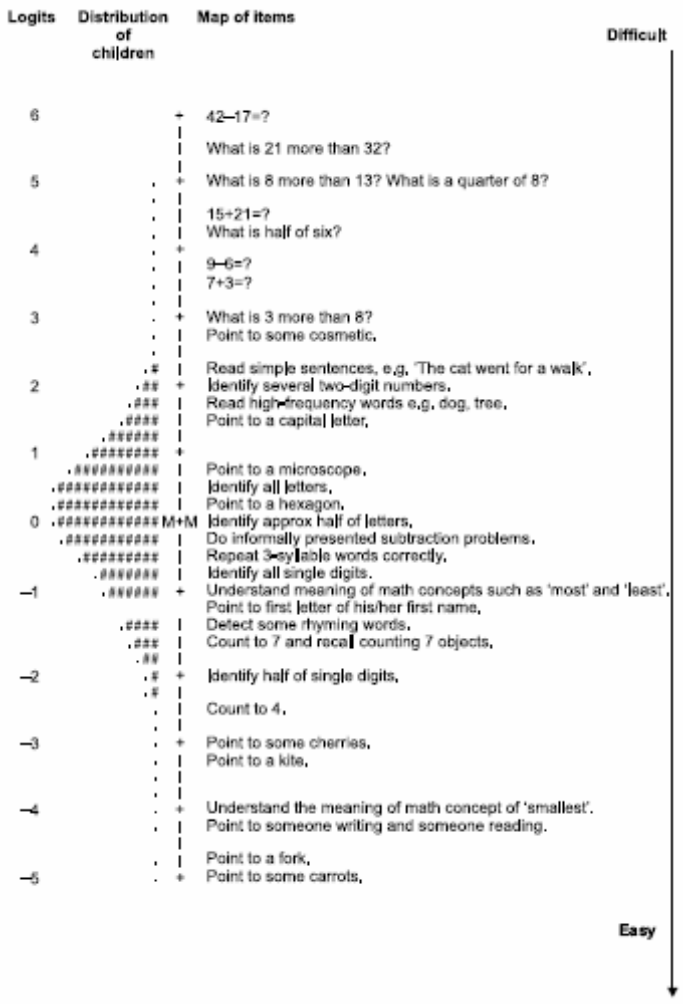

Figure 1: What children know and can do when they start school in Scotland (Merrell and Tymms 2007)

What might a description of what children know and can do when they start school look like? Figure 1 is taken from a study of Scottish children starting school (Merrell and Tymms 2007) and provides a graphical illustration of what we have in mind. It shows both the distribution of pupils and their abilities on the same scale. The enormous variation is apparent and differences between sexes, in social background, and other groupings readily follow. In the longer term it also becomes possible to take such a description and show how what children know and can do changes as they progress through their primary years. The parallel chart for England is almost identical once the half year difference in the age of starting school is taken into account. The statutory Foundation Stage Profile, which monitors the progress of children as they move through the Foundation Stage in England, could not be used to generate such detailed objectively based information.

Typology and structure

Which aspects of the educational system are important? In writing about monitoring systems Fitz-Gibbon and Tymms (2002) suggested that 'Multiple indicators[1] for complex organizations are a fairer representation of the multiple realities within each than is any attempt to assign a single label…'. A similar point applies when considering standards in primary schools, and their description of the following typology of indicators (A-F) for monitoring educational domains (see also Fitz-Gibbon and Kochan 2000) is used as a structure for this report:

A. Affective, for example attitudes, aspirations, quality of life. This can apply to both teachers and their pupils.

B. Behavioural, for example skills, cooperation, initiative.

C. Cognitive, for example achievement.

D. Demographic descriptors, for example sex, socio-economic status.

E. Expenditures, for example resources, time.

F. Flow, for example who is taught what for how long, curriculum balance.

G. Growth, for example physical, motor and health development.

The last item (growth, for example physical, motor and health development) was not included in the original list but it completes the key areas which are important when considering standards and quality in the primary years. Of course all the areas are connected, for example cognitive and motor development are interrelated (Diamond 2000); the quality of nutrition, both pre and post-natal, impacts on cognitive development (Glewe and King 2001); birth weight is related to reading at the age of 11 (Corbett et al. 2007); and so on.

There is a certain amount of overlap between the above domains and the more recent 'Every Child Matters: Change For Children' framework (Department for Education and Skills (DfES) 2004) in which the five aims and outcomes are being healthy, staying safe, enjoying and achieving, making a positive contribution, and achieving economic wellbeing.

Some of the A-G factors relate to input and output measures, whilst others are processes. In other words, some provide a source of factors (such as socio-economic status) against which standards can be assessed whilst some indicate the standards themselves (such as achievement in mathematics). This review presents an overview of standards and quality in English primary schools over time with respect to some of the factors described in the A to G typology. It is beyond the scope to cover them all in detail, and information is sorely missing in some areas. The report also discusses the findings in relation to some government initiatives, and concludes with a discussion of implications for the future.

Background and context

The past twenty years have seen substantial changes in the English education system. The 1988 Education Reform Act, the aim of which was to raise standards, led to the introduction of a national curriculum and a statutory assessment framework. The National Curriculum was intended to provide a broad, balanced and coherent curriculum for children aged

[1] 'An indicator can be defined as an item of information collected at regular intervals to track the performance of a system.' (Fitz-Gibbon 1990).

between 5 and 16. Key stages were introduced, with Key Stage 1 including children aged 5 – 7 years and Key Stage 2 including children aged 7 – 11 years. The statutory assessments, conducted at the end of each key stage, were originally conceived to provide formative and diagnostic information to guide teachers' practice, as well as providing summative information about the levels of attainment reached (Task Group on Assessment and Testing (TGAT) 1988). However, this rapidly shifted and tests became an accountability tool. The data enabled comparisons between children, schools and local authorities to be made and was in the public domain. The inspection system was reformatted into a body with quite a different purpose from its predecessor (Fitz-Gibbon 1995, 2001; Dunford 1998; Dunford et al 2000) and again fed into the accountability model with the expressed purpose of monitoring the quality of teaching, management and children's attainment.

In 1997, following the election of the Labour party, the White Paper *Excellence In Schools* (DfEE 1997) placed emphasis on the importance of the basics of literacy and numeracy. The National Literacy Strategy's Framework and the National Numeracy Strategy's Framework were introduced into primary schools in 1998 and 1999 respectively. These frameworks provided teachers with a clear set of age-related outcomes linked to learning progression in literacy and mathematics (see DfES 2006 for current information). Meanwhile a variety of different ideas were brought in, an example being the more than 600 initiatives directed at raising achievement for 11 year olds in statutory tests brought into the education system by 1999 (Sharp 1999). The 'Every Child Matters' initiative is a new approach to the well-being of children, combining services with the aim of supporting children.

Sources of evidence

A literature search was conducted in January 2007 using combinations of the following keywords: Behaviour, England, Literacy, Math, Mathematics, Primary, School, Skills, Standards and Trends. Relevant references were found on ERIC, WorldCat and ECO databases, and the Google Scholar search engine. Other relevant papers, not found through the literature search, have also been reviewed.

The studies in this review are not limited to nationally representative datasets. Some of the studies have small samples of just a few schools, which taken together provide a more comprehensive picture than relying solely on the findings of national statistics from statutory assessments. Take for example the work of Davies and Brember. They were assessing children at a time when very little other data were available; that was essentially just after it was decided to abandon the Assessment of Performance Unit (APU). Although their sample of schools was small, they collected data over a number of years and their work is very useful from a historical perspective. Other data collected from local education authorities and studies such as the Performance Indicators in Primary Schools (PIPS) project (2007), filled in the gap between the end of the APU and the time-point at which the data from the statutory assessments could be regarded as reliable.

Summary of the evidence: affective

Although, as stated earlier, this indicator can apply to both pupils and their teachers, this review will focus on pupils.

Pupils' attitudes: reading

Past studies have reported a positive relationship between attitude to reading and reading attainment or progress in the primary years (Twist, Gnaldi, Schagen, & Morrison 2004; Tymms 2001; Baker and Wigfield 1999; McKenna, Kear & Ellsworth 1995). A positive attitude is widely regarded as desirable and important, and Sainsbury and Schagen (2004) stated that

'involvement in books allows children to experience through imagination other worlds and other roles, and this involvement contributes to their personal and social development as well as to their reading abilities'. However, attitude towards reading is just one aspect of the broader construct of motivation to read. Guthrie and Wigfield (2000) distinguished five aspects within the construct: learning orientation (a dedication towards understanding the content of what is being read); intrinsic motivation; extrinsic motivation; self-efficacy and social motivation (sharing of reading material). One study which included some of these aspects was a study of children's reading choices by Hall and Coles (1999). They surveyed the reading habits of 2,900 children aged 10 years during October 1994, investigating the type of material read, the number of books read, the amount of time spent reading books, and the children's perception of their own ability. The survey replicated a previous study conducted in 1971 by Whitehead et al., enabling the authors to look at changes and similarities over time. There was a slight, but statistically significant, increase in the quantity of books read between 1971 and 1994 (excluding those read as part of lessons or homework) for both boys and girls of this age, and 90 per cent of the sample rated their own reading ability as being average or better in the 1994 survey. The 1994 study, not unexpectedly, found a clear relationship between socio-economic grouping and the amount of book reading, with children from more advantaged backgrounds tending to read more. Girls reported reading more books than boys and although few children reported reading non-fiction exclusively, those who did tended to be boys. Later Gorman et al (1991) largely confirmed the findings, but by 1988 just 76 per cent of boys and 87 per cent of girls confirmed that they enjoyed reading stories. They also reported that 10 per cent of the sample 'hated writing'; this involved twice as many boys as girls.

Focusing more specifically on attitude towards reading, the Assessment of Performance Unit (APU) collected data from children aged 11 years between 1979 and 1983 (Gorman et al. 1988). They found that in 1980, 90 per cent of pupils indicated that they enjoyed reading stories. There was a change towards less positive attitudes over the five years of the study, however, and in 1983 a third of pupils agreed with the statement that they were 'not interested in books'.

The 1994 study by Hall and Coles surveyed children's attitudes as well as their reading habits. 77 per cent of 10 year-olds reported positive attitudes towards reading, with girls being more positive than boys. Brooks, Schagen and Nastat (1997) surveyed 5,229 eight-year old children in England and Wales and found similar trends to Hall and Coles with about a quarter of pupils reporting negative attitudes towards reading.

In 1998 Tymms (2001) analysed data collected from 21,000 pupils aged 7 years and found them to be generally positive towards reading. 68 per cent of the sample gave a very positive response to the statement 'I look forward to reading' and a total of 89 per cent were either neutral or positive. Just 11 per cent of children gave a negative response to the statement.

The Progress in International Reading Literacy Study 2001 (PIRLS) included a survey of attitudes to reading of children aged 10 years. Pupils were presented with a four-point scale to rate their attitudes to the following items: 'I read only if I have to'; 'I like talking about books with other people'; 'I would be happy if someone gave me a book as a present'; 'I think reading is boring'; and 'I enjoy reading'. The responses were averaged and then grouped into three bands (high, medium and low on the student attitude scale). The English pupils were generally less positive than children in other participating countries, placing them towards the bottom of the sample. This was in contrast to their reading abilities (Mullis et al. 2003). The high band included 44 per cent of pupils in the English sample, the medium band included 43 per cent and the low band 13 per cent. The international averages were 51

per cent of students in the high band, 43 per cent in the medium band and 6 per cent in the low band.

More recently, Sainsbury and Schagen (2004) assessed attitudes to reading of children aged 9 and 11 years in 1998 and 2003. They used the same questionnaire and the same 28 non-representative schools at the two time-points. 77 per cent of Year 4 pupils in 1998 reported that they enjoyed reading stories, but by 2003 the figure had fallen significantly to 71 per cent. The proportion of Year 4 children who reported that they were not interested in books remained virtually the same (20 per cent) over time. 77 per cent of Year 6 pupils reported that they liked reading stories in 1998 but this figure had fallen significantly to 65 per cent by 2003. The proportion of Year 6 pupils who were not interested in books decreased, although not significantly, from 19 per cent to 16 per cent over time. Girls were significantly more positive towards reading than boys.

Although the studies reviewed in this section surveyed samples of children at different ages and did not use common questionnaires, collectively they demonstrated pupils in primary schools are very positive about reading. There is evidence of attitudes to reading declining with increasing age, but this drop in attitude scores by age is not restricted to England (see for example Epstein and McPartland 1976). Reading enjoyment may have declined over time for pupils in the upper-primary age range but the evidence here is ambivalent. The possible changes could be related to policy changes, such as the National Literacy Strategy and National Curriculum, but Robertson et al. (1996) suggested that the impact of film and television offer children an appealing way to access stories without the need for reading. They also suggested the possibility that society now offers more distractions to children than were available in previous times.

Pupils' attitudes: mathematics

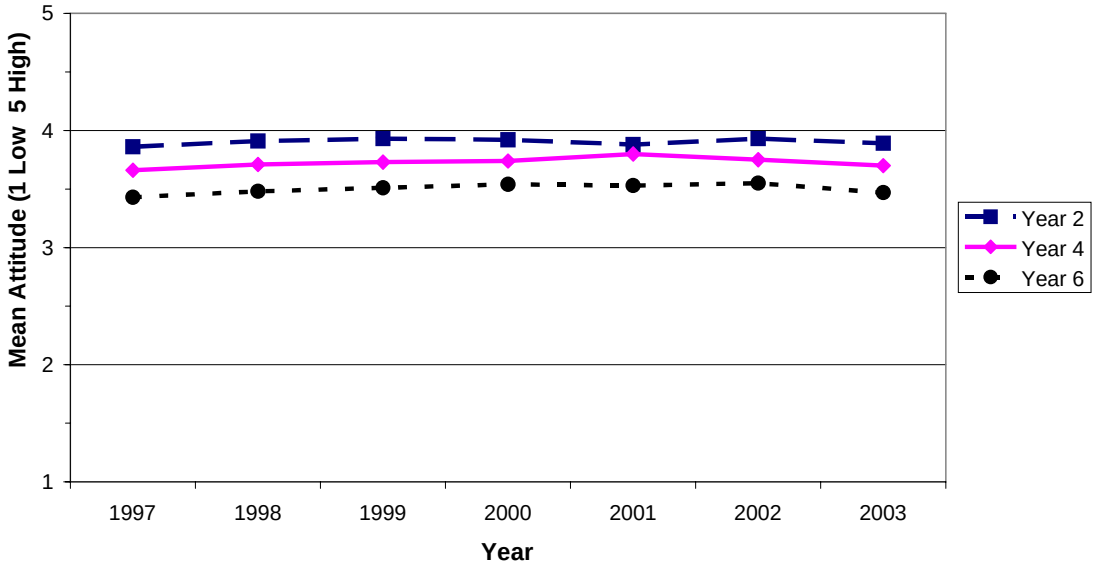

Figure 2: Attitude towards mathematics from Albone and Tymms (2004)

There are fewer studies of children's attitudes to mathematics than there are to reading. Tymms (2001) reported that children aged 7 years were less positive towards mathematics than towards reading and school. Only 52 per cent of children responded positively and 27 per cent neutrally to the statement 'I look forward to sums', compared with the statement 'I

look forward to reading' to which 68 per cent of children responded positively and 21 per cent neutrally.

Albone and Tymms (2004) investigated changes in attitudes towards mathematics in children in Years 2, 4 and 6 (aged 7, 9 and 11 years respectively) between 1997 and 2003. A group of 56 English primary schools was used for the study and longitudinal data were available. They found that attitudes to mathematics declined with the increasing age of the pupils but, when they investigated trends over time, there was no change in the mean responses of pupils for each year group between 1997 and 2003. There were no differences between boys' and girls' attitudes to mathematics. Figure 2 above, taken from their paper, demonstrates the trends between 1997 and 2003.

Pupils' quality of life

In a review of testing and motivation for learning, Harlen and Deakin-Crick (2003) found several studies which focused on the effects of the statutory testing on pupils' self-esteem, behaviour and motivation to learn.

Davies and Brember (1998 and 1999) studied the self esteem of pupils in five schools over a period of eight years, beginning two years before the introduction of the statutory end of Key Stage tests (SATs). They saw a decline in the self esteem of pupils in Year 2 over the first four years, with the greatest decline coinciding with the introduction of SATs. As the assessment procedures were simplified and teachers became used to them, the self-esteem of successive cohorts of Year 2 pupils improved. The final cohort of children was more positive than any of the previous ones. The self-esteem of older pupils in Year 6 did not show the same decline but it should be noted that the study of those pupils did not begin until four years after the beginning of the study of Year 2 pupils.

Reay and Wiliam (1999) used a mixture of focus groups, individual interviews and classroom observations to investigate the views of pupils aged 11 years towards the statutory end of Key Stage 2 assessments. The sample consisted of a class of 20 pupils from a single London school. The authors noted considerable changes in the pupils over the course of an investigation that spread over the Spring term of 1998, the term leading up to the assessment. The pupils expressed an awareness of the consequences of the statutory assessment and anxiety about failure.

Pollard et al. (2000) reported negative behaviour and de-motivation in association with summative assessment.

More recently, the Briefing Paper published by the National Union of Teachers (2006) brings together evidence from previously published research and the results of a survey carried out on their behalf by Neil (2002). It points to an association between SATs and an increase in the stress and anxiety of pupils.

Despite the evidence outlined above for changes in self-esteem, stress, and quality of life, the situation is not clear. It must surely be true that pupils in Year 6 exhibit anxious behaviour as they prepare for, and sit, statutory assessments and that this must surely have held in Year 2 when there was statutory testing at the age of 7 (see for example McDonald A.S. 2001). However there are a number of provisos that need to be set out.

Firstly, stress, self-esteem, attitudes and quality of life all relate to different constructs and should be broken down and discussed separately in serious investigations. For example, self-esteem is best construed as being composed of several factors (Marsh et al 1988). Secondly, the evidence is based on small scale non-representative samples. Thirdly, any evidence for change should be seen against a background of 'a substantial rise in psychosocial disorders

affecting young people over the last 50 years' (Collishaw et al. 2004). Finally, and perhaps most importantly, it is not clear what levels of stress are appropriate in our primary schools. Too much stress is clearly problematic but a complete absence of stress is not a perfect state of affairs either. Furthermore, optimum levels of stress vary from individual to individual (Eysenck 1967).

Perhaps the fairest conclusion is that testing in our schools causes anxiety and stress in pupils. This probably increased in the mid 1990s as statutory testing started to bed down.

Summary of the evidence: behaviour

Children learn key behaviours at school, and one of the more important functions of schooling is to mould behaviour. Some will start school with behavioural problems that significantly affect their ability to function academically and socially, for example those with severe problems of inattention, hyperactivity and impulsivity. Children who are identified with these behavioural problems by their class teachers tend to have significantly lower reading and mathematics attainment than those with no observed behavioural problems. This has been found in England as early as the start of school in Reception, and by the end of primary school they have fallen even further behind by as much as 1.2 standard deviation units (Merrell and Tymms 2001; Merrell and Tymms 2005). The proportion of such children has been estimated at eleven percent (Merrell and Tymms 2001) and forms a significant group of children at risk of failure over time.

Naturally there are many other important issues associated with behavioural issues, but ADHD characteristics are common and important. Space does not permit further investigation here of this or other issues.

Summary of the evidence: cognitive (literacy and mathematics)

This review is split into the two broad areas of mathematics and literacy. Literacy is further divided into reading, writing and spelling: spoken English and the comprehension of spoken language are also considered. Mainly for reasons of space other curriculum areas are not considered here.

The studies of mathematics and literacy are further separated into studies within the UK and international studies, and the UK studies naturally break down into three periods of time. The first covers the period from when reliable data were first collected up to the Education Reform Act of 1988. It draws on surveys with defined samples from primary pupils at different ages. There then follows an interim period before the third stage which runs from the large scale national test data collected in 1995 to the present.

Controversy

Before documenting details of the changing standards for mathematics and reading in England, it is appropriate to note the recent controversy surrounding the issue. The debate goes much deeper than an academic dispute as it links directly to public political claims. When the Labour party came to office they put great emphasis on standards, and the mantra 'Education Education Education' was translated into action. Far from reversing the Conservative administration's changes they accelerated them and by way of evidence of the impact of their policies they pointed to the rising statutory test scores at the end of primary schooling. For English, mainly reading, the results indicated that the percentage of children gaining a level 4 between 1995 and 2000 rose from 48 to 75 per cent. For mathematics the rise was from 44 to 72 per cent. Both of these are dramatic rises and it is hardly surprising that they were repeatedly cited as evidence for the efficacy of policies. Michael Barber, who was

Head of the Standards and Effectiveness unit before moving to the Cabinet Office and who was the main architect of the National Numeracy and National Literacy Strategies, was keen to tell the rest of the world of the success and how to transform educational systems with comments such as 'Large scale reform is not only possible but can be achieved quickly' (Barber 2000).

The dramatic rises in scores were largely accepted uncritically. For example, in the £1 million evaluation of the strategies, headed by Michael Barber's long time Canadian friend Michael Fullan, no mention was made of the possibility of problems with the figures. Even the National Audit Office (2001) used the National Literacy Strategy as an example of successful Policy making using the test scores as evidence of efficacy.

In 1996 the rises started to seem very good and an Assistant Chief Executive of SCAA (School Curriculum and Assessment Authority, precursor to QCA) wrote: 'an independent benchmark could be useful in showing that standards have not slipped, *particularly if national performance improves over the year*' (Hawker 1996, emphasis added). Tymms and Fitz-Gibbon (2001) pointed to contradictory evidence, however, and private conversations were questioning the official figures. A little later, the abrupt change of a steep rise to a flat line in 2000 looked odd. It was also strange to see the English and mathematics results hugging each other so closely. It was time to review the evidence but taking on the Establishment over such a key issue is no small matter. After demonstrating that the official rises misrepresented the way that standards had changed, Tymms decided that he had better seek independent authoritative support and sent his paper to the Statistics Commission asking for their comment. Very professionally they looked into the matter thoroughly and their report (2005) confirmed the finding that the official data has overstated the rise. QCA, the body responsible for maintaining standards in statutory testing, agreed. Only the DfES demurred, under the then Secretary of State of Education Ruth Kelly. She asked to the Permanent Secretary Sir David Normington to write a rebuttal, which he duly did.

Since then, Michael Barber has been knighted and the Statistics Commission has been disbanded.

What follows is a summary of the best evidence available relating to standards in English and mathematics in English primary schools. The statutory tests results from 1995 to 2000 are largely ignored because the mechanisms used to maintain the cut-scores for a level 4 were faulty. After 2000 the data become much more useful.

Mathematics: studies within the UK

Although it is convenient to review standards in mathematics as a whole, mathematics is, of course, composed of a number of sub-components. The APU, for example (The APU Experience 1990), divided mathematics into number, measures, algebra, geometry, and probability and statistics. The Trends in International Mathematics and Science Study (TIMSS)[2] also breaks its data collection down into similar, overlapping but not identical, categories. Unlike reading, where general tests measure the same underlying construct (see for example Stenner et al. 1988), mathematics differs (see for example Brown et al. 2003) and it is quite possible for an individual to be good at number but fail to understand aspects of geometry, or to be good at problem-solving but not good at mental arithmetic, for example. This means that the study of mathematics and its standards over time is complex. Nevertheless the various measures of mathematics are inevitably correlated with one

[2] The International Association for the Evaluation of Educational Achievement (IEA) has been responsible for the TIMSS.

another and it also makes sense to write about mathematics as a single measure whilst recognizing that it can, and should, be broken down in some situations.

Mathematics: up to 1988

Conclusions of work between 1978 and 1982, from the APU and reported in Foxman (1990), indicated that 'Concepts and Skills' for 11 year olds improved slightly by 1 or 2 percentage points. Over the same period Northern Ireland was ahead of England and Wales at the age of 11, and Wales was somewhat behind England and Scotland. Between 1982 and 1987 there was a general slight rise. For example, in Geometry there was a rise of one to two per cent; in Measurement the rise was about one per cent; for Probability and Statistics it was one per cent. But Number had dropped by about two per cent and in one of its four sub-categories (Fractions) by about 4.5 per cent. Algebra had risen by one per cent.

In conclusion, between 1978 and 1987 there had been a steady small improvement in the mathematics scores of children at the end of their primary education although there had been a decline in Number.

Mathematics: 1990-95

Very little information is available during the interim period, from the abandonment of the APU in 1990 until 1995. The one study that stands out is that of Davies and Brember (2001). They reported the assessment of all Year 6 pupils in the same five randomly chosen schools in one LEA from 1989 to 1998. The mathematics scores remained constant.

Mathematics: since 1995

The information available for this period has been summarised in Tymms (2004). The main sources of data from within England are:

- The statutory end of Key Stage 2 assessment data
- The statutory end of Key Stage 1 data
- Performance Indicators in Primary Schools (PIPS) Project data for pupils in Year 6 (see for example Tymms 1999)
- Judy Davies and Ivy Brember (2001)
- The Leverhulme Five Year Longitudinal Study (Brown et al. 2003)
- The DfES/QCA/Ofsted data (Minnis and Higgs 2001)
- The QCA-commissioned comparability study (Massey 2003)
- LEA data: Data collated from six authorities in Massey (2003) and Tymms (2004).

This review concentrates on the results from the end of primary schooling, although key figures from earlier years are noted. This is partly because the attainment of children at this age can be seen as the result of all the schooling up to that time, but also because this is when most data are available. It is also generally the case that the older the child in primary school, the more reliable the test data. One clear reason for the improvement in reliability is that the reliability of a test is dependent on the number of questions asked and *ceteris paribus* older children can deal with more questions per half hour than younger children.

The statutory test data from the end of Key Stage 2 (age 11, Year 6, end of primary schooling) are reported as the percentage of students who obtained a level 4 or above. There was a steady rise in that statistic from 1995 to around 2000, with an uncharacteristic drop in 1998 and a very modest rise thereafter. The drop coincided with the introduction of the oral

mathematics test but the following year the general upward trend was more than made up for. Tymms (2004), investigated this large rise by comparing the scores from statutory tests with data from the other independent studies, listed above, that had collected data over the same period.

For the purposes of the research they were all converted to a scale with a mean of 100 and a SD of 15. The Davies and Brember study indicated that scores rose non-significantly over that period by 3.5 points. The PIPS mathematics data from Year 6 pupils are available from 1997 to 2002. Scores rose by 9 points. By contrast the PIPS Year 4 data rose by just 1.6 points between 2001 to 2005. The Leverhulme study, which was carried out by Brown et al. between 1998 and 2002, suggested a rise of 2.7 points for Year 4 pupils although they found variation across different areas of mathematics. The QCA/DfES/Ofsted data collected between 1998 and 2000 rose by 5.2 points. The Massey (2003) study was commissioned by QCA to replicate the English end of Key Stage 2 testing from 1997 and 2000, with equivalent samples in Northern Ireland. Massey found that mathematics scores rose about 3.8 points between 1997 and 2000. Finally, independent assessment data collected by LEAs demonstrated a rise between 1996 and 1998 of 1.5 points and a rise between 1998 and 2000 of 1.5 points.

Overall, data from the studies reviewed consistently showed a rise in mathematics scores between 1995 and 2000. The rise was smaller than the statutory test data suggested and was equivalent to 7.7 standardised points or an Effect Size of 0.5, or a rise from 44 per cent gaining a level 4 or higher to 64 per cent. From 2000 to 2006 the statutory test results rose from 72 per cent gaining a level 4 or above to 76 per cent. This is equivalent to 1.9 standardised points or an Effect Size of a 0.1.

Mathematics: international studies

Studies which compare achievement are always subject to criticism, and international studies are particularly vulnerable (see for example Prais 2007; Hilton 2006). Despite this, of all curriculum areas, if it is possible to say something meaningful about standards across countries it should be possible to do so in mathematics.

The International Association for the Evaluation of Educational Achievement (IEA) has been responsible for the Trends in International Mathematics and Science Study (TIMSS), formerly known as the Third International Mathematics and Science Study, which has conducted repeated surveys of mathematics in primary school for a number of years. Between 1995 and 1999 there was apparently no significant change in results for English pupils (Ruddock 2000), but the results from 2003 were considerably higher. The rise was dramatic; between 1995 and 2003 the increase amounted to 47 standardised points on a scale with a standard deviation of a hundred, which is nearly half a standard deviation unit. However, there were problems with the sample and this has been the focus of significant criticism even though the rise parallels that reported in Tymms (2004).

England came tenth out of 25 participating countries in the 2003 TIMSS study. These were mostly industrialised countries in what is referred to as Grade 4 in the study (10-year olds).

Literacy: studies within the UK

Reading: studies within the UK

As noted earlier, general tests of reading largely measure the same construct regardless of the format. This puts researchers in a stronger position when it comes to interpreting standards in reading over time from a range of studies than for mathematics, because both invariably involve a variety of tests.

Figure 3: Progress in International Reading Literacy Study (PIRLS) 2001 results

As a general rule, children learn to read in primary school. Most cannot read before they start school and the vast majority of children are able to do so by the time they move to secondary school. The general consensus is that this process is a successful one and it has been ongoing for generations. There is, however, a small proportion of children who are not reading fluently by the age of 11, and this is often referred to as the 'tail of underachievement'. There is a particularly long tail for reading in the UK and this can clearly be seen clearly in the Progress in International Reading Literacy Study (PIRLS) 2001 results for children aged 9 years (http://timss.bc.edu/pirls2001i/pdf/P1_IR_Ch01.pdf) (Figure 3).

The very high position of England in the chart (third) is discussed later but it is the spread of scores to the left that is of focus here. The long tail of underachievement was also apparent for the United States, New Zealand, Scotland and Singapore. These are all English speaking countries and it is clear that a proportion of children have significant difficulty in learning to read English. This is worrying for it is the precursor to the existence of a group of students

who find it hard to access the curriculum in secondary school and ultimately leads to illiterate adults whose ability to function in society is severely impaired. There is not the space here to discuss why this should be the case, however, and the focus now shifts to evidence for changes in reading standards over the years.

Reading: 1948 to 1988

Brooks (1997) provides a good account of work in this area. Between 1948 and 1979, there were a series of surveys of reading of 11-year olds in both England and Wales. The Watts-Vernon test was used in 1948, 1952, 1956, 1961, 1964 and 1970-71, whereas the National Survey 6 (NS6) test was used in 1955, 1960, 1970-71, 1976 and 1979. The APU Language Monitoring Project tests were used in 1979, 1980, 1981, 1982, 1983 and 1988.

The scores from the earliest of these tests, the Watts-Vernon, gradually rose between 1948 and 1964. This improvement took place in the years following the Second World War and it is thought that the post-conflict recovery period largely contributed to the rising scores. The results from the NS6 test series of 1955-1979 remained largely stable.

The APU tests were different in content to the Watts-Vernon multiple choice test. They were based on 'authentic' tasks and the scores from them showed very little change between 1979 and 1988. There was a slight improvement, but it was so slight as to be of little educational importance. Surveys were carried out in Scotland between 1953 and 1963, and then 1978 to 1995. These used the Edinburgh Reading Test and then the Assessment of Achievement Programme (AAP) surveys in P4 and P7 (ages 9 and 11 years respectively). There were slight changes in the survey results but nothing that could be said to be important educationally.

Reading: 1990-95

As noted earlier, the APU was disbanded in 1990 after the introduction of the National Curriculum and national testing because it was said that national testing would take over the monitoring of standards within England. This left a gap of five years without reliable assessment on a national scale because the new statutory End of Key Stage tests took some time to become established. It was 1995 before they were eventually considered to have overcome the inevitable 'teething problems' associated with the introduction of such a large-scale system. However, there are two sources of evidence in relation to reading during this time. One comes from Gorman and Fernandes (1992) which reports a study produced by the NFER of changes in reading standards between 1987 and 1991. Using the same test for 7 and 8 year olds, they conducted two separate surveys in 1991, both producing very similar results. The sample consisted of 2,170 pupils in 61 schools in 1991. One of the surveys looked at pupils in the same 24 schools that were in the 1987 work and the second looked at a broader sample. Reading scores dropped between 1987 and 1991 by 4-5 standardised points on a scale with a standard deviation of 15 points. There was some discussion in the report as to why this drop should have occurred. It was suggested it may have been due to changes in home and school contexts, or perhaps something to do with the teachers' industrial dispute in the mid-1980s, or because of the introduction of a National Curriculum and heavy work-loads experienced by teachers.

A second source of information comes from the work of Davies and Brember (2001) in which they looked at the reading test scores of 5 randomly selected primary schools from one Local Education Authority. They carried out assessments in those schools every year from 1989 onwards. Their results indicate a steady drop between 1989 and 1995 amounting to a fall of about 7 points on a scale with a standard deviation of 15 points. This finding corresponds to the findings of Gorman and Fernandes.

Reading: since 1995

The period from 1995 brings us into a different era because at that point national data from the statutory End of Key Stage assessments became available. As in the previous section on mathematics, this section will not use data from the end of Key Stage 1 assessments but will focus on the end of Key Stage 2 tests for 11 year olds. The scores from these tests showed remarkable rises in English (reading and writing) between 1995 and 2000. The proportion of children who reached the standard of Level 4 (the standard which the DfES characterised as 'expected' for children of that age) rose from 48 per cent to around 75 per cent. This remarkable rise was challenged by Tymms (2004) who compared the End of Key Stage 2 results with a number of other datasets:

- The statutory end of Key Stage 3 assessment data
- The statutory end of Key Stage 2 data
- Performance Indicators in Primary Schools (PIPS) Project data for pupils in Year 6 and Year 4 (see for example Tymms 1999)
- Judy Davies and Ivy Brember (2001)
- The DfES/QCA/Ofsted data (Minnis and Higgs 2001)
- The QCA-commissioned comparability study (Massey 2003)
- LEA data: Data collated from six authorities in Massey (2003) and Tymms (2004).

All in all it was possible to look at 11 different studies, most involving the individual testing of thousands of pupils at different points in time, and to synthesise those results to produce a view of what happened to standards over the period in question. The report by Massey et al. (2003) to QCA concluded that the rise in reading had been 'illusory'. Tymms concluded that the results produced by QCA had exaggerated what had happened, but nevertheless found that there had been an improvement. Overall the data suggested that the proportion of children achieving Level 4 and above in reading had risen from 48 per cent to 58 per cent, which corresponds to an effect size of about 0.2 (3 points a standardised reading tests with a standard deviation of 15). This is a very small effect and could easily result from test practice.

In conclusion it can be said that the standards of reading have remained more or less the same over a very long time – since the 1950s. There was a rise following the immediate post-war period and there was a slight drop followed by a recovery after the introduction of the National Curriculum, but in essence standards have remained constant. Very little data specifically investigates the tail of under-achievement but the indications are that this has not improved, especially when the focus of effort of schools across the country has been on Level 4s, which is well away from the level of the under-achievers. Resources and effort were targeted at those pupils who were within range of achieving a Level 4 because that is the standard by which the success of schools was judged.

Reading: international studies

The major international study of reading is the Progress in International Reading Literacy Study (PIRLS), which was conducted in 2001 and involved tests of reading of 9-year olds. England came out extraordinarily well in this study, coming third out of 35 countries and only behind Sweden and the Netherlands, although, as was noted earlier, there was a very wide range of achievement in the English sample. However, the study was not without its problems and Hilton (2006) itemised a series of issues. Challenged in particular was the idea that a single reading test could be translated into different languages and different cultures. The second major point had to do with the sampling, which showed England to be

particularly advantaged. The tests themselves also have remarkable parallels to statutory tests used in England, but the most damning revelation was that England excluded a wider group of children with special needs than other countries.

Writing

Perhaps because writing is harder and more expensive to assess than reading, it has been assessed far less often. Although there are numerous tests of reading which are regarded as reliable and valid, there are very few, if any, tests of writing of similar quality that can be bought off the shelf, and very few studies which have looked at writing standards over time. The APU made some considerable efforts in conceptualising and assessing writing but, although they produced some interesting findings, they did not report longitudinal studies (White 1986).

Writing has been tracked through the statutory End of Key Stage literacy tests but it is confounded with reading. Massey (1996) did investigate changes and the report indicated that the marking standards in relation to writing seemed to have been maintained (Massey et al., page 63). It would seem that writing standards improved in primary schools between 1995 and 2000.

Spoken English and aural comprehension

The APU carried out some interesting and detailed work on Speaking and Listening and produced clear descriptions of abilities at age 11 and their relationships to other factors. They also created useful assessments in the area (MacLure and Hargreaves 1986) but no longitudinal results have been reported.

Curriculum-free cognitive development

Although much effort is put into the curriculum-related cognitive development of children, they develop abilities in other areas as well and would develop cognitively even if school did not exist. This is an important area and worthy of extensive study, and covers non-verbal as well as verbal skills. Indeed it covers cognitive development generally and any proper treatment of the area would deal with changes over time for pupils of particular ages as well as growth trajectories for individuals. (For a recent theoretical perspective of the latter see Dickens forthcoming).

One part of this curriculum-free cognitive development involves vocabulary acquisition, which develops both inside and outside school time. Children learn new curriculum-related vocabulary in school, and as they learn to read this impacts on vocabulary acquisition. Vocabulary is also a reflection of the environment in which children find themselves and their ability to gain knowledge from the range of external sources available to them. In 2003 Alan Wells, who was at that time the director of the Basic Skills Agency, reported that the language skills of some young children were suffering. He suggested that the reasons for this decline in spoken language were due to some parents not devoting sufficient time to communicating with their offspring and other parents lacking the skills to develop the language of their children (Daily Telegraph 2003). This led the PIPS project, run by the Curriculum, Evaluation and Management (CEM) Centre at Durham University, to analyse data on the vocabulary acquisition of children starting school in England between 1998 and 2002. The data were collected from an assessment of children at the start of Reception in the same 722 schools each year. The assessment remained unchanged over that period and thus enabled changes over time to be investigated. The researchers found that the vocabulary levels of these children had in fact remained stable over that period (PIPS Project 2003).

Demographic descriptors

It is often said that schools reflect society and any complete consideration of standards should be carried out against a background of demographics. These have been changing. The average numbers of children per family has been falling; the proportion of twins and higher multiples has risen from around one in 90 live births to one in 30; parents are older; immigration has increased; ethnic diversity has widened along with the number or languages spoken in society; social boundaries are changing and so on.

Any or all of these factors can influence standards but they are simply noted as important in any holistic consideration of standards.

Expenditure

Education takes up a noticeable proportion of the GDP (5.7 per cent in 2005-06) and this feeds, or should feed, directly into the quality of provision in our schools. In the financial year 2005-06, £10,908 million was spent on primary schools (excluding the cost of Ofsted) (Education and Skills Committee 2006). The cost for Ofsted in the 2005/06 financial year was just under £220 million (Ofsted 2006). Figures provided by the DfES indicate that the National Numeracy Strategy cost a total £553.05 million for the period 1998-05. The parallel figure for the National Literacy Strategy (NLS) was £597.25 million. The two initiatives have now been combined into the National Strategy and it is run by a private company.

It is vital that these vast sums of money are well spent and it makes sense to think in terms of cost effectiveness. The £500 million pounds spent on the NLS had a barely noticeable impact of reading.

The estimated cost of providing End of Key Stage 2 tests in 2007 is £33 per pupil. This includes production of test papers, transportation and marking. There are an estimated 573,000 pupils eligible for the assessment in 2007, making a total estimated cost of £18.9 million (National Assessment Agency, 2007). To what extent is education in England better as a result of this expenditure? This is a hard question to answer and to be able to do so, one would need to include a consideration of alternatives as well as the many reasons for which national testing is carried out. Although this question could not be answered here it is vital that it be asked. Indeed, all educational initiatives should be evaluated and subjected to cost benefit analysis. All education managers, from the classroom teacher to the Secretary of State for education, need to prioritise their time and resources, and judgements need to be made about the gains made in relation to the efforts made in order to do this efficiently.

Flow

Other sections of this review have reported on attainment and attitudes over time, and this section will focus on classroom processes and how teaching and classroom management practices have changed in response to the implementation of the initiatives described in the introduction.

Broadly speaking, teaching in primary schools in the 1960s and 1970s was heavily influenced by the principles, attributed to Piaget, of the child investigating and learning independently within a stimulating environment. This theory and subsequent practice was challenged during the 1980s by the approach attributed to Vygotsky, which supported the view that a child's cognitive development requires verbal interaction with peers and adults. Thus cognitive development was seen as a social as well as a biological process. The common interpretation of Piaget's theories led to the child taking an active role as a learner and the teacher taking a more passive role in facilitating learning experiences, whereas the interpretation of Vygotsky's theories implied that the teacher was required to take a more

active role in encouraging a learner to move beyond their current level of cognitive development. Alexander (2006) noted that the Vygotskian approach challenges the role of the teacher to move from a position of letting a child discover things for him/herself to a more interactive role between teacher and child, but he warned that it does not support a return to the traditional model of direct instruction from the teacher in order to pass on knowledge to the pupil. Through the studies reviewed in this section, we will consider how the implementation of national initiatives during the last 25 years have influenced teacher, pupil and peer interactions, and describe some of the changes witnessed in schools over this time.

Several studies were undertaken following the 1988 Education Act, some with longitudinal follow-ups. A study by Maurice Galton et al. (1999) spanned the time before and after the Act. They compared teaching and classroom management practices over two decades between the late 1970s and the late 1990s by replicating the ORACLE study (Observational Research and Classroom Learning Evaluation), which commenced in 1975. Over three years, beginning in September 1976, the study observed Key Stage 2 pupils in 58 primary school classrooms distributed over three local education authorities. The follow-up study was smaller-scale. The research team revisited 28 classrooms from the larger sample of original schools, where they then carried out the same kinds of classroom observations. Galton et al. concluded that during the twenty-year period, very little appeared to have changed on the surface. The physical layout of the classrooms was similar, with children sitting together in mixed-sex groups. There was an observed increase in whole class teaching, much of which involved direct instruction, where pupils were seated around the teacher. In the 1970s this kind of activity typically lasted for 10 minutes at the beginning and the end of the morning, and for quarter of an hour at the end of the day when the teacher read a story. In contrast, children were observed to spend up to half an hour in a single session in 1996. This lead to more of them becoming distracted and consequentially to an increase in teacher-pupil routine feedback interactions. Differences in the way that subjects were presented were noted. In the 1970s, pupils spent most of the morning studying literacy and mathematics, similar to the 1990s, and the other curriculum subjects tended to be combined and studied through topics; however, there was a shift over time towards the study of these subjects becoming more discrete. It appeared that by teaching each subject in turn, teachers found it easier to provide evidence to inspectors that they were spending the statutory amounts of time on each subject. Writing and listening to the teacher were predominant activities at both time-points, accounting for 50 to 65 per cent of the lesson depending on the curriculum area, and the authors concluded that the cognitive demands placed upon pupils changed little. The pattern of teacher and pupil interaction remained stable, i.e. the amount of time spent by the teacher asking questions and making statements. However, the content of those types of interactions changed over time with an increased proportion concerned with task and routine matters. They found less emphasis on active learning and more time devoted to direct instruction in the follow-up study. With a change in focus towards more class teaching, the combination of group-work coupled with individual attention has declined. From the 1990s study, Galton et al. identified a group of children who had different characteristics to children of the 1970s. These children neither seek nor receive attention, they do not display extended periods of off-task behaviour but neither do they demonstrate high levels of engagement. They liken these behavioural characteristics to those which have been observed in other studies of pupils in secondary schools who are exposed to direct instruction.

In 1991, five years before the follow-up to the ORACLE study described above, Cato et al. surveyed the teaching of literacy of pupils in Year 2 (aged 7 years) in 122 schools. These schools were predominantly combined infant and junior schools with only a few schools that

taught infants alone. Of the schools visited by the research team, only two teachers used whole class teaching as their main strategy although it was widely used for shorter periods and specific activities such as story-telling and hand-writing. The majority of teachers organised their pupils into groups for most activities although this did not necessarily mean that the pupils in a group were working collaboratively. There was a discrepancy between the number of occasions the teacher reported listening to each pupil read and the frequency observed by the research team. Observations indicated that teachers spent far less time listening to their pupils read than was witnessed. Upon further investigation, teachers described how they managed to fit this activity into periods outside class time such as assembly and lunch time. For materials used to teach reading, most teachers reported using a combination of a reading scheme and 'real' books. For the method of instruction, almost all teachers said that their methods included a phonics approach and this was the main method for a quarter of the sample although these were not necessarily systematic. When asked about the impact of the National Curriculum, teachers reported a greater impact on the teaching of writing than reading. They had widened their teaching to include more work on variety of writing styles, punctuation and spelling. For reading, teachers described how they had increased their use of 'real' books, presumably to meet the demands of the curriculum which required them to introduce pupils to a wide range of reading material. The majority of teachers thought that their teaching methods had remained largely unchanged, but some felt the pressure of having to include all of the elements it contained and that this had led to a decrease in the flexibility to more in-depth study of topics which particularly interested pupils. Overall, the resource reported to be in most scarce supply following the implementation of the National Curriculum was time. Teachers were under pressure to fit all the statutory requirements into the school day. The finding that children were often grouped but within those groups actually worked independently echoed the findings of the ORACLE study.

A couple of years later, in 1992 and 1993, the CICADA study (Changes in Curriculum-Associated Discourse and Pedagogy in the Primary School) carried out interviews and observations of teachers and classroom practice. CICADA found that the 1988 legislation brought with it a change in terms of an increase in the management of curriculum planning, assessment and record-keeping but that pedagogy in the classroom remained relatively stable. Teachers reported four main areas of concern: the burden of statutory assessment; the demands of record-keeping; the unrealistic range and quantity, yet not necessarily appropriate content, of the National Curriculum – particularly at Key Stage 1; pressure to introduce more whole-class teaching. This echoes the concerns found by other studies.

The PACE project (Primary Assessment Curriculum and Experience) was established in 1989 to monitor the impact of the changes occurring after the 1988 Education Act, and continued until 1997. More specifically, it sought to investigate changes in primary schools of teachers' practices, perspectives and behaviour during that period in terms of curriculum, pedagogy and assessment, using data collected from observations, questionnaires and interviews. The findings of the PACE project were reported by Osborn et al. (2000). They echoed the findings of Galton et al. in noticing an increase in the proportion of instruction and whole class teaching at the expense of more interactive pedagogy. There was a marked reduction in group work and an increase in individual work. Over the course of the study, this resulted in pupils becoming less independent in their use of space and their choice of activity, and this trend was more prevalent in Key Stage 2 than Key Stage 1. In fact Osborn et al. described how, as the study progressed and the pupils grew older, they preferred their teachers to choose their work for them, thereby avoiding risk of failure. It seemed as though the teachers had conveyed their own anxieties about the pressure to fit the work prescribed by the National Curriculum into the time available to their pupils. Integrated topic work

was found to be increasingly difficult to sustain. Osborn et al. suggested that these changes in pedagogy were in part due to the implementation of the National Curriculum, which brought with it an increased pressure for teachers to deliver a broad curriculum and yet maintain a focus on improving standards of literacy and numeracy. Additionally, teachers were under pressure for pupils to meet expectations in the end of Key Stage statutory assessments, introduced during that period, and for their own teaching to meet the expectations of the inspection system.

The National Literacy Strategy began in English primary schools at the start of the Autumn term in 1998 with the aim of dramatically improving literacy standards. The National Numeracy Strategy was introduced a year later in Autumn 1999. The DfES (2003) claimed that the strategies had been successful at improving the quality of teaching and in raising standards in primary schools, and Ofsted also reported positive findings (2002). Other research that investigated the teaching processes and pupil-teacher interactions in the classroom were less positive. They found changes in teaching methods, classroom organization, use of time and resources in response to the introduction of the strategies but found fewer changes in pupil-teacher interactions. Whole class teaching was evident but this was a traditional, teacher-directed style rather than interactive. Teachers asked closed questions, pupils supplied brief answers which were not probed further, praise rather than diagnostic feedback was given and there was an emphasis on factual recall rather than higher-level activities (Alexander 2001; English et al. 2002; Hardman et al 2003; Mroz et al 2000; Moyles et al 2003).

Children's growth

The primary school years are a time of rapid physical development. Not only are children getting taller and heavier, but they are developing physical skills and their health is being affected by everything around them. Physical development is important and intimately linked to other features of schooling. Bigger pupils can bully smaller pupils and physical appearance, including size, can influence the perceptions of peers and teachers alike. Similarly, fine motor coordination is linked to reading and there are concerns about the physical activity levels of school age children and their weight which may presage diabetes and heart problems. It has even been shown that physical growth spurts are associated with cognitive growth spurts (Andrich and Styles 1994).

Sadly there is neither the space nor the time to expand on this topic here. But any complete consideration of standards would need to consider this issue.

Summary

The English education system has been subjected to major interventions, especially since the Education Act of 1988. It is difficult to be confident about direct causal links between changes in processes and changes in outcomes. However, it is interesting to look at quality and standards over time in relation to the implementation of national systems.

The attitudes of primary school children are generally very positive, although they decline with age and are more positive towards reading than mathematics. They are very positive towards school. Since the late 1980s the attitudes of children in the upper primary age range declined with respect to reading, whereas attitudes to mathematics appeared to remain stable.

Levels of reading have been more or less static since the 1950s. There was a small rise after the immediate post war period, a small drop immediately following the introduction of the National Curriculum, and another slight rise after that.

The levels of mathematics have slowly but gradually risen over the years with some small regression here and acceleration there. The largest increases have been in the last dozen years.

Turning to the impact on processes, it seems that teachers felt under pressure to fit all the statutory requirements into the school day when the National Curriculum was introduced. This often led to more whole class teaching and direct instruction at the expense of interactive group work and the freedom of pupils to pursue topics of particular interest in greater depth. The statutory assessments at the end of each Key Stage, the reporting of those results in the media and the inspection system all increased the level of pressure on all levels of the education system, and coincided with changes in practice. Detailed research has found that the initial format of Ofsted inspections had a detrimental effect on pupils' exam performance in secondary schools (Shaw et al. 2003), and the overall effect of the changes, particularly league tables, was associated with a narrowing of the curriculum in primary schools. The literacy and numeracy strategies, which were introduced in 1998 and 1999 respectively, appeared to reinforce more traditional whole-class teaching methods, and studies found that the discourse between teachers and pupils tended to be low level.

Conclusions and implications for the future

Pupils in our primary schools get a good deal. Although it may seem strange to say it, average is good and it is our view that a typical pupil starting in Reception and moving up to Year 6 has a good quality of life in school, and learns to read well and to get on with fellow pupils. Of course the quality can be improved, particularly for those children who have persistent problems with reading and more generally for mathematics. For teenagers there is a problem with drunkenness and anti-social behaviour, and it may be that the issue could be addressed in primary schools.

In what ways could primary education have been better over the last 25 years? A significant amount of money has been invested into the English education system, and there are examples where more effective use could have been made of resources. Reading attainment has shown just a very slight improvement and attitudes to reading have declined. A clearer focus on those who have serious difficulty with reading would have made sense with less concentration on accountability in general and level 4s in particular. Five hundred million pounds was spent on the National Literacy Strategy with almost no impact on reading levels. Clearer trials of material before general release, more attention to the research literature, and serious consideration of cost effectiveness would all surely have helped.

We further suggest that standards over time should be monitored using assessment systems that operate outside an accountability framework, using samples rather than whole populations, and that such monitoring should include all of the areas outlined in the typology described in the introduction.

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APPENDIX 1

THE PRIMARY REVIEW PERSPECTIVES, THEMES AND SUB THEMES

The Primary Review's enquiries are framed by three broad perspectives, the third of which, primary education, breaks down into ten themes and 23 sub-themes. Each of the latter then generates a number of questions. The full framework of review perspectives, themes and questions is at www.primaryreview.org.uk

The Review Perspectives

P1 Children and childhood
P2 Culture, society and the global context
P3 Primary education

The Review Themes and Sub-themes

T1 Purposes and values
- T1a Values, beliefs and principles
- T1b Aims

T2 Learning and teaching
- T2a Children's development and learning
- T2b Teaching

T3 Curriculum and assessment
- T3a Curriculum
- T3b Assessment

T4 Quality and standards
- T4a Standards
- T4b Quality assurance and inspection

T5 Diversity and inclusion
- T5a Culture, gender, race, faith
- T5b Special educational needs

T6 Settings and professionals
- T6a Buildings and resources
- T6b Teacher supply, training, deployment & development
- T6c Other professionals
- T6d School organisation, management & leadership
- T6e School culture and ethos

T7 Parenting, caring and educating
- T7a Parents and carers
- T7b Home and school

T8 Beyond the school
- T8a Children's lives beyond the school
- T8b Schools and other agencies

T9 Structures and phases
- T9a Within-school structures, stages, classes & groups
- T9b System-level structures, phases & transitions

T10 Funding and governance
- T10a Funding
- T10b Governance

APPENDIX 2

THE EVIDENTIAL BASIS OF THE PRIMARY REVIEW

The Review has four evidential strands. These seek to balance opinion seeking with empirical data; non-interactive expressions of opinion with face-to-face discussion; official data with independent research; and material from England with that from other parts of the UK and from international sources. This enquiry, unlike some of its predecessors, looks outwards from primary schools to the wider society, and makes full though judicious use of international data and ideas from other countries.

Submissions

Following the convention in enquiries of this kind, submissions have been invited from all who wish to contribute. By June 2007, nearly 550 submissions had been received and more were arriving daily. The submissions range from brief single-issue expressions of opinion to substantial documents covering several or all of the themes and comprising both detailed evidence and recommendations for the future. A report on the submissions will be published in late 2007.

Soundings

This strand has two parts. The *Community Soundings* are a series of nine regionally based one to two day events, each comprising a sequence of meetings with representatives from schools and the communities they serve. The Community Soundings took place between January and March 2007, and entailed 87 witness sessions with groups of pupils, parents, governors, teachers, teaching assistants and heads, and with educational and community representatives from the areas in which the soundings took place. In all, there were over 700 witnesses. The *National Soundings* are a programme of more formal meetings with national organisations both inside and outside education. They will take place during autumn 2007 and will explore key issues arising from the full range of data thus far. They will aim to help the team to clarify matters which are particularly problematic or contested and to confirm the direction to be taken by the final report. As a subset of the National Soundings, a group of practitioners - the *Visionary and Innovative Practice (VIP) group* – is giving particular attention to the implications of the emerging evidence for the work of primary schools.

Surveys

30 surveys of published research relating to the Review's ten themes have been commissioned from 69 academic consultants in universities in Britain and other countries. The surveys relate closely to the ten Review themes and the complete list appears in Appendix 3. Taken together, they will provide the most comprehensive review of research relating to primary education yet undertaken. They will be published in thematic groups from October 2007 onwards.

Searches

With the co-operation of DfES/DCSF, QCA, Ofsted, TDA and OECD, the Review is re-assessing a range of official data bearing on the primary phase. This will provide the necessary demographic, financial and statistical background to the Review and an important resource for its later consideration of policy options.

Other meetings

In addition to the formal evidence-gathering procedures, the Review team meets members of various national bodies for the exchange of information and ideas: government and opposition representatives; officials at DfES/DCSF, QCA, Ofsted, TDA, GTC, NCSL and IRU; representatives of the teaching unions; and umbrella groups representing organisations involved in early years, primary education and teacher education. The first of three sessions with the House of Commons Education and Skills Committee took place in March 2007. Following the replacment of DfES by two separate departments, DCSF and DIUS, it is anticipated that there will be further meetings with this committee's successor.

APPENDIX 3

THE PRIMARY REVIEW INTERIM REPORTS

The interim reports, which will be released in stages from October 2007, include the 30 research surveys commissioned from external consultants together with reports on the community soundings and the submissions prepared by the Cambridge team. They are listed by Review theme below, although this will not be the order of their publication. Report titles may be subject to minor amendment.

Once published, the interim reports, together with briefings summarising their findings, may be downloaded from the Review website, www.primaryreview.org.uk .

1. *Community Soundings: report on the Primary Review regional witness sessions*
2. *Submissions received by the Primary Review*
3. *Aims and values in primary education*. Research survey 1/1 (John White)
4. *The aims of primary education: England and other countries*. Research survey 1/2 (Maha Shuayb and Sharon O'Donnell)
5. *The changing national context of primary education*. Research survey 1/3 (Stephen Machin and Sandra McNally)
6. *The changing global context of primary education*. Research survey 1/4 (Hugh Lauder, John Lowe and Dr Rita Chawla-Duggan)
7. *Children in primary schools: cognitive development*. Research survey 2/1a (Usha Goswami and Peter Bryant)
8. *Children in primary schools: social development and learning*. Research survey 2/1b (Christine Howe and Neil Mercer)
9. *Teaching in primary schools*. Research survey 2/2 (Robin Alexander and Maurice Galton)
10. *Learning and teaching in primary schools: the curriculum dimension*. Research survey 2/3 (Bob McCormick and Bob Moon)
11. *Learning and teaching in primary schools: evidence from TLRP*. Research survey 2/4 (Mary James and Andrew Pollard)
12. *Curriculum and assessment policy: England and other countries*. Research survey 3/1 (Kathy Hall and Kamil Øzerk)
13. *The impact of national reform: recent government initiatives in English primary education*. Research survey 3/2 (Dominic Wyse, Elaine McCreery and Harry Torrance)
14. *Curriculum alternatives for primary education.* Research survey 3/3 (James Conroy and Ian Menter)
15. *The quality of learning: assessment alternatives for primary education*. Research survey 3/4 (Wynne Harlen)
16. *Standards and quality in English primary schools over time: the national evidence*. Research survey 4/1 (Peter Tymms and Christine Merrell)
17. *Standards in English primary schools: the international evidence*. Research survey 4/2 (Chris Whetton, Graham Ruddock and Liz Twist).
18. *Quality assurance in primary education*. Research survey 4/1 (Peter Cunningham and Philip Raymont)
19. *Children, identity, diversity and inclusion in primary education.* Research survey 5/1 (Mel Ainscow, Alan Dyson and Jean Conteh)
20. *Children of primary school age with special needs: identification and provision*. Research survey 5/2 (Harry Daniels and Jill Porter)

21. *Children and their primary education: pupil voice*. Research survey 5/3 (Carol Robinson and Michael Fielding)

22. *Primary education: the physical environment*. Research survey 6/1 (Karl Wall, Julie Dockrell and Nick Peacey)

23. *Primary education: the professional environment*. Research survey 6/2 (Ian Stronach, Andy Pickard and Elizabeth Jones)

24. *Teachers and other professionals: training, induction and development*. Research survey 6/3 (Olwen McNamara, Rosemary Webb and Mark Brundrett)

25. *Teachers and other professionals: workforce management and reform.* Research survey 6/4 (Hilary Burgess)

26. *Parenting, caring and educating*. Research survey 7/1 (Yolande Muschamp, Felicity Wikeley, Tess Ridge and Maria Balarin)

27. *Children's lives outside school and their educational impact*. Research survey 8/1 (Berry Mayall)

28. *Primary schools and other agencies*. Research survey 8/2 (Ian Barron, Rachel Holmes, Maggie MacLure and Katherine Runswick-Cole)

29. *The structure and phasing of primary education: England and other countries*. Research survey 9/1 (Anna Eames and Caroline Sharp)

30. *Organising learning and teaching in primary schools: structure, grouping and transition*. Research survey 9/2 (Peter Blatchford, Judith Ireson, Susan Hallam, Peter Kutnick and Andrea Creech)

31. *The financing of primary education.* Research survey 10/1 (Philip Noden and Anne West)

32. *The governance, administration and control of primary education*. Research survey 10/2 (Maria Balarin and Hugh Lauder)

The Primary Review is a wide-ranging independent enquiry into the condition and future of primary education in England. It is supported by Esmée Fairbairn Foundation, based at the University of Cambridge and directed by Robin Alexander. The Review was launched in October 2006 and aims to publish its final report in autumn 2008.

FURTHER INFORMATION

www.primaryreview.org.uk

General enquiries: enquiries@primaryreview.org.uk

Media enquiries: richard@margrave.co.uk

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