



EXECUTIVE SUMMARY

“Marks Tell You How You’ve Done... Comments Tell You Why”

Attitudes of Children and
Parents to Key Stage 2
Science Testing
and Assessment

September 2010

Introduction

The Wellcome Trust commissioned this study¹ in January 2009 with the aim of providing insights into English and Welsh pupils' and parents' views of testing and assessment in science at Key Stage 2 (KS2 – age 11). National Curriculum testing (using Standard Assessment Tests – SATs) has always been surrounded by controversy about the usefulness of the tests for the children taking them; SATs have been accused of driving a 'teaching to the test' culture, competitive school league-table ranking and placing children under stress for much of their academic lives. All this, it has been claimed, has been to the detriment of the quality of teaching and learning in the later years of education.

All SATs, including science, were abolished in Wales in 2004. In England national tests were abolished at KS3 (age 14) in 2008 and it was announced in May 2009 that KS2 science SATs were to be abolished; therefore the children from the English schools sampled for this survey were among the last to sit the science SATs.

The debate has continued over summer 2010 with the new coalition government proposing reform of curriculum and assessment.² This study, timely at its inception, has a significant contribution to make to the ongoing debate in exploring:

What do children and their parents really think about the assessments which children face during

primary science education? What do they think about the subject of science itself?

This unique research from the School of Education at Queen's University Belfast provides important new insights in answer to these questions, from people whose voices are too rarely heard: the children and their parents. Nearly 1000 Year 6 and Year 7³ children in England and Wales took part, as well as 245 parents.

Children were involved not simply as objects of the research, but as active participants in the process. Groups of children aged 10 to 12 years old were closely engaged in both the design of the children's survey, which formed the centrepiece of the research, and its interpretation.

With England and Wales both having undergone radical changes to their primary science assessment systems⁴ in recent years, the survey's design offered the opportunity to investigate and compare in detail the views of both children and adults on these moves.

The findings provide insights into how children and their parents might react to any reforms policy makers may make to primary science assessment. They present a valuable opportunity to use research evidence to inform policy decisions.

The research addressed six fundamental questions about primary science and its assessment.

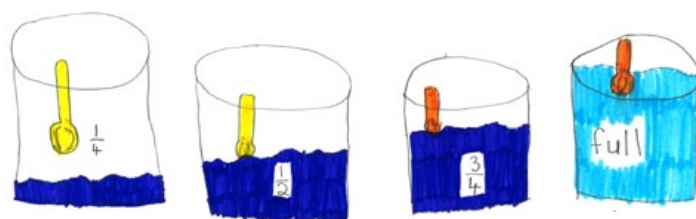
Do children enjoy primary science?

“Most children like science, it is just that they may like other subjects more.”

– Researchers' summary of comments made by children interpreting the survey

The children's responses showed that the vast majority enjoy science, with 90 per cent in England and 85 per cent in Wales saying they enjoyed it at least “a little”. A quarter said they enjoyed it “a lot”. Ninety per cent of parents support the position of science as a core national curriculum subject.

Children rated science their fourth favourite subject when asked which they enjoyed the most, with only PE, art and maths proving more popular and subjects including English, drama and history less widely liked. Children who were asked



to interpret these findings said many children liked science; it was just not their favourite subject.

There was further evidence, however, in line with previous studies, that children's enthusiasm may decline with age. While only 8 per cent of Year 6 children reported finding no enjoyment in science lessons, the figure doubled to 16 per cent among those in Year 7. The decline in enjoyment is statistically significant, and fits a pattern seen in other STEM (science, technology, engineering and mathematics) subjects. It may be that it is not primary science assessment *per se* that puts children off science; it could be caused by a combination of factors in Year 7 and/or the transition from Years 6 to 7.

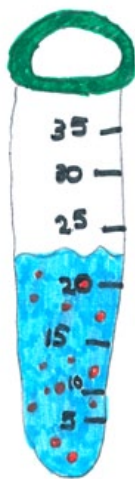
1 Available online at www.wellcome.ac.uk/education.

2 Department for Education. The Schools System Draft Structural Reform Plan. 2010. www.education.gov.uk/news/news/~media/Files/lacuna/news/SchoolsSystemStructuralReformPlanpdf.ashx [accessed 1 September 2010].

3 Year 6 children are aged 10–11 and Year 7 are aged 11–12.

4 England and Wales have pursued different approaches in recent years to the use of SATs in primary schools, with Wales having dispensed with the KS2 tests for 11-year-olds in 2004. The SATs did not feature in the education of the children from Wales except where some schools used them as optional assessments. In England, KS2 SATs in science were withdrawn in 2009, meaning the children in this study from England were the last to take them.

What do children think about primary science assessment?



“Science assessments help children to see how much they have improved in science and what they need to improve on. They are very useful.”

– English Year 6 child

Most children in English schools can see the point of science assessment, with the overwhelming majority (95 per cent) describing it as useful.

In England, more children than not said primary science assessments helped them to enjoy science and to learn more about it. However, there were also negative signs as to how assessment made them feel, and in terms of its impact on their home lives. Asked to choose a word to describe how they felt about science assessments, children in both countries tended to choose a negative word rather than a positive one, with “nervous” chosen most often by children in England.⁵

The findings in Wales were less positive than those in England. A total of 89 per cent said science assessments were useful in general, but fewer than half of those expressing a view said that they helped them to enjoy the subject. In Wales, the word most frequently chosen by children to express their reaction to primary science assessments was “bored”.

Overall, children see the point of science assessments, but they do not always like doing and preparing for them, nor the emphasis being placed upon the marks they receive. It may also be the case, as discussed later, that children would value having a greater say in the design of assessments.

How much time do children spend practising for primary science assessment?

“Children from English schools spent significantly more time on revision.”

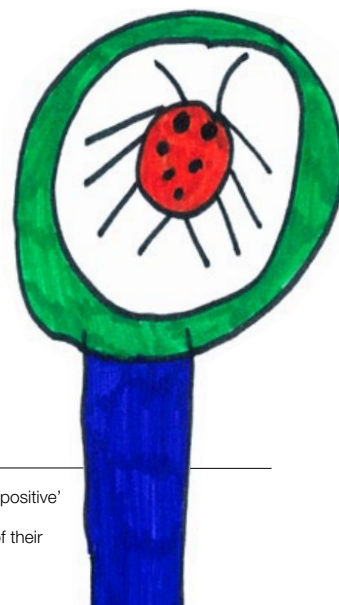
– Researchers’ summary of answers from children in English and Welsh schools

More than half – 53 per cent – of children in English schools⁶ said they completed practice SATs science papers “very often” in Year 6 lessons, compared with only 14 per cent in Wales.

More than one in five children in England said they spent more time on revision than on any other activity. In Wales, only one child in 20 said this. In England, the time spent revising appears to have been at the expense of other activities such as carrying out experiments and working on computers, which more children in Wales reported doing.

Despite this, across both countries, around half of children reported taking part in science games, drama and stories, while 70 per cent learned about science outdoors or went on field trips.

The widespread use of SATs practice papers was not generally favoured by children. Asked what they thought was the best method for finding out how well they were doing in the subject, only 10 per cent opted for practice SATs papers, with “other science tests” the most popular option. This was the case throughout all groups of children, in both England and Wales, suggesting that intensive completion of SATs papers may not be the ideal way for children to gain insight into how well they are faring in science.



⁵ The surveyed children were presented with eight words to describe how they felt about science assessments, balanced between ‘positive’ and ‘negative’ words. Alternatively, they could come up with a word of their own.

⁶ The survey of English children was carried out in June 2009, a month after children in England had taken the 2009 SATs, the last of their kind, following a decision by the then UK government to abolish them from 2010.

What is the impact of primary science assessment on children's home lives?

“You don’t get time to talk to your family and sometimes you can break up with your friends because you’re so pressurised and you can’t think.”

– English Year 6 child

The impact of science assessment on friendships and home life was largely negative, in the eyes of the children. Fewer than one in five recorded any positive effect, and they appeared to feel particularly strongly when answering this question.⁷ Children in English schools expressed stronger negative feelings than children in Welsh schools.

The negative impact on their home lives was typically the feeling of pressure from people at home to study/do well, and of having less time to spend with their family. Many children reported feeling stressed or nervous, being made fun of or bullied over their marks, and some even talked of assessment causing break-ups between friends.

One Year 6 child in England said: “My family push me too much and my friends get all nervous and angry and don’t want to be friends anymore.”

Even in Wales, test pressure was felt, despite the absence of a national SATs system. One Welsh child said: “It affects my home life if I get a bad mark in a test as my parents are angry. It does affect my friendships as people might call you dumb.”

Overall, a large proportion of children indicated that poor performance in tests had a negative impact on their self-esteem.

Parents, however, were in general not overly concerned. Two-thirds of Welsh parents said science assessments had no effect on children’s home lives, while 57 per cent of those in England said that science assessment actually improved matters at home. Only 13 per cent cited concern about their offspring being stressed or under pressure. This contrasted strongly with the children’s views.



What do children and their parents think about the decision to scrap science SATs in England and Wales?

“I don’t think it’s a good idea to stop SATs because the children won’t try as hard and they will learn less because they won’t revise.”

– English Year 7 child

Although children voiced concerns about the impact of assessment on them, most of those in England were still unhappy about the UK government’s decision to stop science SATs, which was announced in May 2009, just before the survey took place.

Asked if they agreed with the move, 56 per cent said “no”, 26 per cent said “yes” and 18 per cent were unsure. ‘Open’ responses to the question by children in England found 70 per cent wanted to keep SATs. One Year 6 child said SATs should be retained “because the science test helps you get better at it and your knowledge gets better”.

Overall, children’s reasons for keeping SATs included (in decreasing order of frequency of mention): that they would not learn as much science; that they would not know their levels in science; that SATs were a good preparation for secondary school; and that science would become less important in school without SATs. Children who agreed with the decision cited reasons including reducing stress and promoting better learning, with one saying: “I think this is a good idea because many children are very stressed and nervous”.

Children who enjoyed science a lot and those who perceived they were very good at science were more positive about retaining SATs than other children.

There was a clear split between the views of English and Welsh parents on the two countries’ decisions to abolish SATs.

Parents in England were apprehensive. Some 36 per cent said it was a change for the worse, compared to only 23 per cent believing science lessons would improve, and nearly three times as many parents thought children would learn less science as a result than thought they would learn more.

A commonly expressed concern was that science would become less of a priority for schools if children were no longer given national tests in the subject. One English parent said: “To abolish SATs in science will make science go

⁷ Asked to write their own responses, children did so at greater length than for any other part of the questionnaire, with some answers running to 100 words.

down.” Elsewhere in the survey, children said science was already a lower priority in schools than English and maths.

However, in Wales, parents’ views were reversed, most indicating that children learned more about science and enjoyed the subject more without SATs. Nearly six times as many parents (45 per cent) thought the 2004 change to scrap SATs in Wales had been for the better than thought it had been for the worse (8 per cent).

Many Welsh parents believed the assessment process was now much more low-key for children. One said: “My children had no recollection of science assessment in Year 6.”

What do children and parents think is the best form of assessment?

“Put children in groups of five and do projects for each topic and present your project to the class. You could do different things for the project such as: models, PowerPoint, presentations, etc”

– English Year 7 child

Children were invited to imagine they were a primary school teacher and to suggest how they might assess children. In both England and Wales, two options emerged as preferences for this ideal world: end-of-topic tests; and investigations, presentations, projects and research.

Most children strongly favoured being tested on a topic just after they had completed it, rather than waiting until the end of a much longer period of teaching, as happened under the SATs system. They also preferred the more active, ‘fun’ character of assessments that broke away from the traditional pen-and-paper, sitting-at-a-desk approach, opting for presentations, group work and project-based assignments. Some suggested that children should also be given more choice over the type and timing of assessment.

Parents’ views broadly matched those of the children, although they did not highlight the ‘fun’ element (emphasised by many children), oral assessment or giving children choice. A clear majority (61 per cent) of parents in England favoured tests or SATs as their preferred choice of assessment, while in Wales the picture was more complex, with only 17 per cent opting for tests, 24 per cent choosing “teacher assessment” and 19 per cent stressing the assessment of children’s work in science practicals.

Conclusions

- Children understand the value of KS2 science assessment in helping them to learn, and they place importance on genuine feedback about how they are doing. They favour approaches that include investigations, presentations of their own projects and end-of-topic (not end-of-year) testing.

Therefore: these findings add further weight to the call for assessment that is fit for purpose, and add further evidence of the need to adjust the balance of assessment between formative and summative, to show that its value to the child is so much more than simply passing an exam. Assessment must be embedded across children’s learning, be structured to assist children through formative processes and offer a constructive critique on their progress.

- Children and their parents in England are concerned that the removal of SATs will have a detrimental effect on the status of science in primary school.

Therefore: education stakeholders and schools must ensure that the importance of science as a core subject, with all it has to offer, is recognised and built upon in the primary curriculum following the removal of the SATs.

- Many children feel stressed by tests, often to the detriment of their friendships and self-esteem. However, these views contrast with the perceptions of their parents, who do not show the same amount of concern.

Therefore: teachers, parents, developers of assessments and governments must acknowledge that assessment regimes can affect the personal development and confidence of children. It is important to minimise the detrimental impacts testing can have on children by taking their views seriously in developing and implementing assessment and teaching strategies.

- A very clear message to be taken from this study is the value of involving children in the research process – not just seeing them as subjects of research. This was important from the point of view of the research itself, as children have provided unique insights into the interpretation of the findings. From the children’s perspectives, whether as researchers or as participants, those involved felt empowered by being given the chance to voice their informed, considered and reflective views about science assessment.

Therefore: greater attention should be paid to children’s perspectives on the curriculum, assessment and the way they learn and are taught.

Access this summary and the research report at www.wellcome.ac.uk/education

Acknowledgements: Colette Murphy (Queen's University Belfast), Derek Bell and Hannah Baker (Wellcome Trust), Warwick Mansell (Freelance Education Journalist). All pictures drawn by the children's research advisory groups (CRAGs).

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