



# Monitoring the curriculum: evidence from research, practice and learners.

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## The scale of the work

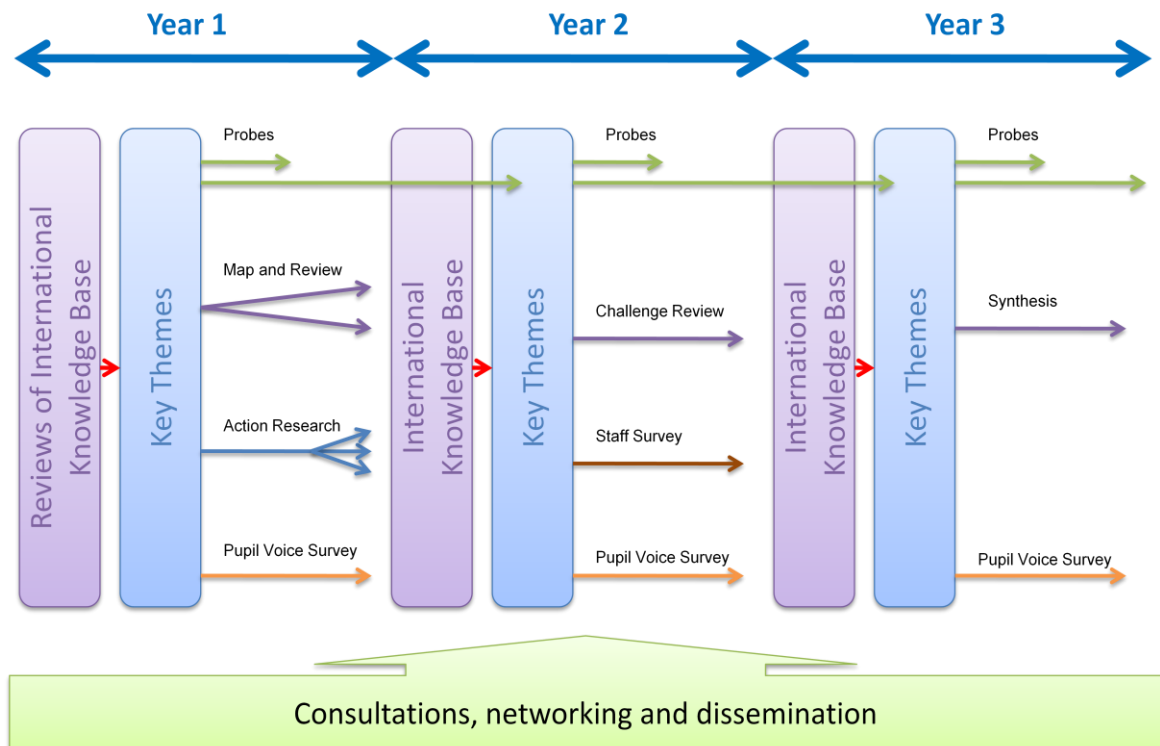
1. This report synthesises evidence from three years (2007-2010) of research, analysis and synthesis undertaken in support of QCDA’s statutory responsibility to monitor the curriculum. As such it represents a sustained and substantial investment in research geared towards informing policy and used incrementally by policy makers to inform the undertaking of policy responsibilities; in effect a form of formative assessment for the curriculum system. The definition of the curriculum we were asked to explore encompassed the entire planned learning experience of young people in schools. This paper draws on the reports of a number of projects carried out each year and from three separate strands of activity:
  - National surveys and focus groups designed to track the experiences of learners and staff (survey data).
  - Multi-method, multi-site probes to gather evidence about how schools that are successful in developing the curriculum tackle specific issues (school-based research).
  - Systematic reviews of the public knowledge base about the curriculum to explore research about curriculum design and development where there is evidence of impact on young people (international knowledge base).

## Building the evidence base: introduction

2. This research has been a considerable undertaking and has depended on the skill and contributions of many professional colleagues. We would like to express publicly our real appreciation of the efforts of 15,060 learners and 570 teaching staff in the 334 schools which have participated in the surveys over the three years of the project and the 100 teaching staff and 799 learners of the 29 probe schools who made very active and extensive contributions to our work. We are also grateful to the many UK and international researchers whose research we have reviewed. A final note of appreciation must go to the members of the Curriculum Evidence Advisory Panel (CEAP) and to the many QCDA officers whose support and advice have been invaluable over the life of the project.
3. The work took place between Summer 2007 and Summer 2010. This was a period of intense curriculum debate and reform. The Children Act 2004 introduced the Every Child Matters' five outcomes (safe, healthy, achieve and enjoy, community participation and economic well being) which provided a framework for all who work with young people. QCA (as it then was) published its "Big Picture of the Curriculum" intended as a tool for making connections between the curriculum and the Every Child Matters framework identifying, for example, core aims for the curriculum in promoting "successful learners, confident individuals and responsible citizens". New arrangements for 14-19 provision were introduced in 2007. The new secondary curriculum was also published in 2007 and had a staged implementation from 2008. A review of the primary curriculum took place in 2009. The new Secondary Curriculum and the Primary Curriculum reviews set out to provide a framework within which the different contributions of schools, local authorities, and support agencies (such as the National College, the Training and Development Agency and the Specialist Schools and Academies Trust) could work together to help ensure that "all learners make the best progress possible and achieve the highest standards".
4. Set in this context, this research focuses on how the curriculum was being implemented in and by schools, but does not set out to investigate the process or outcome of specific policy interventions, or the work of the many national and regional organisations supporting schools with curriculum reform.
5. We describe the approaches taken in each of the three research strands in more detail in the next section of this report. Together, these evidence strands have yielded a consolidated body of data and a range of findings about curriculum development.
6. The evidence from the different strands are synthesised under seven themes (see paragraphs 48-50) which emerge as important components of curriculum design and development linked to effective outcomes for learners:
  - Providing context-based curriculum experiences and connecting the curriculum with learning in the home
  - Creating curriculum experiences that build on learners' existing knowledge, understanding and skills
  - Structuring group work in teaching and planning for effective talk as a means of ensuring all learners can access the curriculum
  - Fostering a less compartmentalised approach to the curriculum to promote conceptual development and to encourage cross-curricular transfer of learning
  - Engaging learners actively in assessment
  - Planning appropriate curriculum tasks; planning for challenge
  - Professional development in subject and pedagogic content and management of curriculum change

7. Within each theme, our synthesis provides evidence about:
  - the benefits (mostly from the literature review evidence);
  - the extent of existing practice, where possible (based largely on the survey data); and
  - examples of how practice is developing on the ground in successful schools (from the school-based research and from the review studies).
8. We then offer some key messages from the three year dataset.

## Project Background



9. The graphic above provides a schematic overview of work for each year of this project. The plans for each year emerged from the known evidence base and built upon it, with the knowledge gained feeding into the planning for the following year. Probes and the student survey remained consistent across all three years. They were supported by action research in 2008, a staff survey in 2009 and by international knowledge base work. The latter began with a map of research reviews and the review of reviews in 2008.
10. The work was designed to build out from both QCA's own questions and concerns and from a map of the current curriculum research landscape. QCA's own questions and priorities were identified by QCA officers and were tested and translated into research questions through dialogue with a group of practitioners and policy partners working through the Curriculum and Evidence Advisory panel (CEAP). This was established for the purpose of providing critical friendship to QCDA's research and monitoring evidence work.
11. The mapping of the international knowledge base in 2008 took the form of a systematic review of research reviews from the international evidence base. It was intended to identify the maturity of the current evidence base and the contours of mature or emerging local and international evidence as a basis for grounding the research over the next three years, and for identifying significant gaps.
12. Survey work focussed particularly on exploring how learners experienced the curriculum offer in all three years of evidence collection; supplemented in 2008-9 by a stratified survey

of the perspectives of teachers and school leaders. The surveys explored and tested in each year through a series of focus groups.

13. All of the foci and research questions were shaped iteratively through consultation with QCA officers and with CEAP. Initially (for 2007-8) this was based on previous rounds of monitoring evidence, priorities emerging from QCA's remit and the insights of practitioners and policy partners about pressure points in the system. In subsequent years the focus of all of the research was selected, again in partnership with QCA's Internal Evidence Steering Group (IESG) and CEAP, on the basis of current policy concerns, findings emerging from the mapping of the international knowledge base and from data emerging from the surveys and probes. For example:
  - A key finding from the 2007-8 survey was that a significant minority of learners did not feel challenged by their curriculum experiences. The decision was therefore taken to undertake a research review in 2009 to explore what is known about how teachers construct challenge in the curriculum and, in 2009-10, to run a series of focus groups to explore how teachers in England experience the strategies and challenges highlighted by the research.
  - The map of the international evidence base in 2007 identified the importance of planning curriculum experiences that generate structured dialogue and exploratory talk, resulting in the probe on Dialogue and Curriculum Development in the same year.
  - The finding from the review about the importance of excellence and continuing professional development (CPD) in subject knowledge for effective curriculum development led to a probe in 2008-9 exploring how schools that are successful curriculum innovators use CPD to support curriculum development and enactment. Similarly, findings in the staff survey in 2009 that classroom teachers, middle leaders and school leaders had significantly different perspectives about the nature of and approach to curriculum innovation in their schools led to a multi-site probe in 2009-10 exploring the management of curriculum change.
  - The finding from the staff survey in 2008-9 about a lack of awareness amongst significant numbers of teachers about gaps between the achievement of advantaged and less advantaged learners and a view amongst a significant number that those that do exist are an inevitable outcome of deprivation, led to the probe in 2009-10 exploring how schools that are successful curriculum innovators are narrowing gaps in achievement for advantaged and less advantaged learners.
  - Two other probes, addressing respectively wellbeing and achievement and participation and engagement, arose more directly from the new secondary curriculum launched in 2007 and its compatibility with the Every Child Matters outcomes.
14. The full list of probe foci were:
  - [Probe 1 – Assessment and curriculum development](#)
  - [Probe 2 – Dialogue and curriculum development](#)
  - [Probe 3 – CPD and curriculum development](#)
  - [Probe 4 – Curriculum innovation, participation and engagement](#)
  - [Probe 5 – Wellbeing and achievement](#)
  - Probe 6 – Narrowing the gap
  - Probe 7 – Curriculum innovation
15. Throughout the project the selection of sample schools in all probes depended on externally verifiable evidence that curriculum development at these sites was well established. This helped ensure that we were able to illustrate and explain *how* things were working in contexts where we already had evidence (from Ofsted and other sources) of excellence in terms of both processes and outcomes.

16. The map of research reviews, published in Spring 2008, highlighted six key findings which were consistent with the claims for the new secondary curriculum. It was therefore decided to concentrate the remaining review work in 2008 on extracting data from the individual studies underpinning the research reviews. This was intended to illustrate the abstract findings from the map with practical details and to attempt to provide more detailed illustration and exemplification of the curriculum claims. The full report, completed in August 2008, created a substantial dataset of curriculum-related evidence and provided a profile of the maturity of the evidence base in many key areas.
17. Outcomes from each strand of activity have been reported fully on an annual basis. This report uses the key themes emerging from the initial research map (see paragraph 25) and from our fieldwork to synthesise and summarise key contours of the evidence from across the project as a whole and to highlight potential implications.

## **Evidence sources: the map, the surveys and the school-based research**

### **The Map**

18. We started with a map of the international knowledge base compiled from 64 reviews of curriculum-related research.
19. Three main types of review were identified which we classified as:
  1. systematic – i.e. using a comprehensive search strategy, transparent inclusion criteria and a rigorous weighting of the evidence from which to synthesise across the studies
  2. interpretive – i.e. using expert knowledge to identify studies, without a rigorous and transparent weighting of the evidence but with a synthesis
  3. descriptive – i.e. an account of the research and the relative weight of evidence but with no synthesis
20. The majority of the reviews (38) were systematic, 15 were interpretive and eleven were descriptive. Most of the reviews from which we synthesised the Map findings were published between 2003 and 2004. Because the evidence from the international knowledge base was generated by reviews of research that were carried out between 1988 and 2010 but covered studies from a wider period, it includes seminal studies such as Tizard (1982) through to 21<sup>st</sup> century research reviews such as Bailey et al's 2008 systematic review of interventions aimed at improving the educational achievement of learners identified as gifted and talented<sup>1</sup>. Where the original, seminal studies are still highly relevant and influential we have continued to refer to them although we have tried, wherever possible, to set them in the context of more recent studies. There were very few reviews published before 2003, suggesting that education has been relatively slow to follow research practice in other sectors (most notably health) in collecting, calibrating and synthesising the evidence from individual research studies.
21. Thirty-six of the reviews mapped the terrain they covered in terms of the numbers of full studies which they reviewed and filtered before arriving at those which met their research criteria. Across these 36 reviews the total number of studies mapped was 5,488. Sixteen reviews mapped between 100 and 500 studies, ten reviews looked at 50-100 studies and six looked at between 10-30 studies.
22. While we do not have this information for the remaining 28 reviews, it is evident that between them the reviews covered a wide swathe of curriculum-related research.



23. The evidence from these reviews revealed six consistent themes. Learning and achievement flourished when it involved some or all of the following:
- curriculum planning for learning that is 'context-based' (dealing with ideas in real or simulated practical situations);
  - connecting the curriculum with young people's experiences of home and community;
  - designing curriculum content and experiences that identify and build on learners' existing understandings;
  - designing curriculum experiences that structure dialogue in group work and encourage collaborative learning – i.e. curriculum experiences that both develop and capitalise upon group work skills;
  - a more flexible approach to the curriculum to enable deeper conceptual development through cross-curricular links; and
  - ensuring teachers have excellent professional development and subject knowledge to enable them to create learning experiences of this kind.
24. These six common themes drawn from empirical evidence have strong connections with key theories that identify underpinning principles and explain key learning phenomena, for example:
- the emphasis on active, context-based engagement with key phenomena and ideas linked with Dewey's ideas about the implications of experience in underpinning knowledge development. Knowledge needs to be experienced by pupils rather than simply acquired;<sup>ii</sup>
  - the emphasis on building a learner's starting point connects with Bruner's notions of enabling learners to revisit complex phenomena in a spiral of increasingly probing encounters; and
  - the emphasis on collaboration connects closely with Vygotsky's ideas about the role of encounters with others in learning (social construction).
25. These themes, together with two further themes which emerged over the life of the project (assessment and challenge) form the framework for this report.
26. Many of the reviews offered rather abstract summaries and so yielded little data about the detailed implementation of the curriculum interventions in the studies. So a second research review explored the 63 individual studies from the reviews that were identified as most rigorous and robust to extract more illustrative detail.
27. For the full reports of these reviews click [here](#) and [here](#).

## The Surveys

28. We conducted a series of three online surveys of learners in England that took place over consecutive years. The surveys consisted of around 100 questions about the ways in which learners experienced the curriculum in relation to:
- challenge and inspiration;
  - flexibility and choice;
  - lifestyles and health; and
  - motivation.
29. The four themes were identified as key themes by members of IESG and CEAP in November 2007.
30. These surveys achieved the following response rates:
- 2,819 primary and secondary learners from 66 schools in 2008;

- 2,380 learners from 83 schools in 2009; and
  - 8,834 learners from 104 schools in 2010.
  - The surveys were complemented by focus groups of learners – including disaffected learners – which explored the same issues in greater depth. The focus groups involved 60 learners from 7 schools in 2008, 49 from 5 schools in 2009 and 143 from 24 schools in 2010. They were explicitly designed to include students who may well have declined to participate in the survey or been unable to do so. The focus groups aimed to have a representative sample of learners both geographically and in terms of school-based demographics such as school size and inspection grade.
31. In 2008, the sample of learners was drawn from those who took part in two learner voice conferences, learners from one secondary school and learners from two pupil referral units.
  32. In 2009, securing participation was more challenging. Focus groups were arranged geographically around the country but because of external factors such as swine flu and snow, some schools had to pull out and other secondary schools had to be recruited at short notice to take their place. The secondary focus group learners were mainly year 7 and 8 as they would have experienced the direct impact of the new secondary curriculum.
  33. In 2010, more primary learners took part in the survey and focus groups, including year 4. We tried once again to ensure good distribution around the country and a mix of year 4, 5 and 6 learners.

#### **Staff survey**

34. In 2009 the learner survey was complemented by a survey of the views of 273 staff from 45 schools in England. Out sample was structured in a layered way to enable us to capture and compare the views of classroom teachers, middle leaders and senior leaders including head teachers. We held four focus groups of 36 practitioners; and supplemented these with 28 telephone interviews in order to ensure we had a full range of perspectives.

#### **The Challenge Review**

35. The survey findings about challenge in the curriculum prompted a systematic review of research into how teachers construct such challenge. The 45 studies synthesised for that review enabled us to explore:
  - the key judgements teachers make that affect the level of challenge within their curriculum offers; and
  - what teachers see as the most challenging learning terrain and learning processes.
36. Six focus groups of primary and secondary English, mathematics and science specialists were subsequently held in 2010 to explore some of the key findings from the challenge review, namely:
  - the difficulties teachers experience when diagnosing individual learner's starting points and how they can be overcome;
  - the risk assessments that teachers make when they plan for challenge and how teachers set about managing these risks; and
  - what teachers see as the main problems with stepping back and assuming a facilitative role and how they can be overcome.
37. Because most of the studies in the curriculum challenge review were focussed on mathematics, science or English (or a combination) and because we wanted to secure a consistent sample that would enable meaningful comparisons (e.g. between primary and secondary and between different subjects) we ran focus groups in each of the core subjects; one for primary and one for secondary (a total of six focus groups). We intended that each

focus group would comprise eight experienced teachers with curriculum associated responsibilities (subject leaders, subject specialists etc.) from different schools within a particular geographical location. We also aimed to achieve a good geographical spread across the focus groups. We succeeded in recruiting a total of 52 experienced teachers from Southampton, Winchester, Dorset, London, Leicestershire, and Cumbria.

## **The School-Based Research**

38. Multi-method, multi-site probes were used to gather evidence about how schools that are succeeding in developing the curriculum tackle specific issues. Evidence from these probes ranged from documentary analysis (including test results) and videoed classroom observations through to school-based action research. The evidence was gathered from a number of different sources, including interviews with participating teachers and senior and middle leaders, student voice and perceptions data, observation (including video) data, and school documentation. Findings were subsequently appraised alongside the wider evidence from the public knowledge base, for example Wegerif et al. (2004) from probe 2 and Myhill et al. (2006) from probe 4. Over the three-and-a-half years of the project, involving more than 20 schools, the probes investigated a range of curriculum themes:
- Probe 1 – Assessment and curriculum development
  - Probe 2 – Dialogue and curriculum development
  - Probe 3 – CPD and curriculum development
  - Probe 4 – How curriculum innovation can help increase participation and engagement
  - Probe 5 – How the curriculum supports wellbeing and achievement
  - Probe 6 – How effective curriculum experiences contribute to narrowing achievement gaps for the most vulnerable children and young people
  - Probe 7 – How the changes required by curriculum innovation are being managed by school leaders in schools that are successfully developing the curriculum
39. We also co-ordinated and supported action research in eight schools to explore the implications of curriculum innovation in different contexts. CUREE provided mentors, tools, data processing back up and collaborative interpretation in workshops. The use of common data collection tools helped us to read across from one site to another, enabling us to draw out common themes and findings likely to have relevance and application outside each individual context.
40. Findings from the school-based research were detailed and practical. They illustrate the many ways in which curriculum planning is integrated into the classroom experiences of young people in both primary and secondary schools. There are many examples of these throughout this report but school leaders and teachers who are aligning their curriculum planning and development with meaningful ways of working for their learners are recommended to read the relevant probe reports.

## **Identifying the seven themes**

41. The evidence from the different strands are synthesised into seven themes. The starting point is the six key themes identified from the initial map of reviews, because of the clear link between these processes and effective outcomes for young people in the international knowledge base (see paragraph 22). We found a substantial overlap between these themes and those from our own data analyses.
42. For our synthesis, the first two themes (curriculum planning for learning that is 'context-based' (dealing with ideas in real or simulated practical situations) and connecting the curriculum with young people's experiences of home and community) have been conflated, both because of the strong connections between them and because the second theme was

not a direct focus of our enquiries and so, emerges less strongly from our data. Also, because CPD was strongly linked with school leadership of curriculum development in our field work we have integrated our findings about both issues within the CPD section.

43. Our cross theme/cross year analysis also highlighted two further 'key' themes which we have explored in this report:
- engaging learners in assessment; and
  - planning appropriate curriculum tasks, planning for challenge.

## **Theme 1. Providing context-based curriculum experiences and linking learning at school and in the home**

### **Benefits – The impact of context-based curriculum experiences on learners**

44. There was strong evidence from the map, the second review and the school-based research of the benefits for learners when the curriculum offered them opportunities to contextualise their learning. Organising learning around a context – that is dealing with ideas and phenomena in real or simulated practical situations – was identified in the map as one of six elements underpinning effective curricula. It was a feature that emerged particularly strongly in reviews of studies in science but occurred across other subjects too. Benefits to learners included improved achievement, increased ability to engage in argument; enhanced engagement and a more positive attitude towards subjects.
45. For example:
- Embedding learners' engagement with new concepts within real world scenarios proved helpful in a range of subjects. Taking on the role of scientists<sup>iii</sup> was found in the US to lead to gains in cognitive ability, and in the UK to improvements in reasoning skills<sup>iv</sup>. Combining exploration of moral issues with the introduction of science subject knowledge was also found to have a positive impact on learners' ability to present and engage in argument. This resulted, for example, in a rise in the number of learners who could explain the pros and cons of genetic mapping<sup>v</sup> and learners increasingly incorporating biological knowledge when constructing arguments<sup>vi</sup>. Beyond science, similar advances in critical thinking were also found in other subjects. For example in history, learners studying the holocaust were provided with curriculum experiences that enabled them to make links with current moral issues<sup>vii</sup>. Not only did this result in improved reasoning skills, but the experimental group also showed significantly greater gains in historical knowledge.
  - Setting a context likely to be familiar to learners was found to lead to improvements in mathematics and foreign language learning. In mathematics, learners who were set word problems relating, for example, to collecting comics, made significantly higher gains in their number skills than control groups<sup>viii</sup>. Likewise, another study<sup>ix</sup> found that language learners fared better in listening comprehension when the subject was one that was familiar to them (a famous rock band), than one that was unfamiliar (a gold rush).
46. Two studies suggested that context-based learning needed to be sustained over time to have ongoing benefits. The large-scale Learn and Serve America programme, in which learners worked in a range of voluntary contexts, saw an initial impact on attitudes and behaviour, for example towards cultural diversity, but that one-time participation had few long-term benefits<sup>x</sup>. In Holland, one study<sup>xi</sup> initially found learners whose physics lessons were based in the context of nature, technology and society gained higher levels of cognitive achievement than control classes. Exploration of a similar physics unit ten years

later identified no such benefit<sup>xii</sup>. The difference between the two is that the former was a whole programme, the latter a single unit.

47. There was strong evidence in the international reviews for the impact of school programmes which set out to connect the curriculum to learners' learning in the home and of involving parents<sup>1</sup> in their children's learning. This very often offered important ways of contextualizing learning and so we have linked the two in this synthesis.
48. The most widely reported impact was on raising learner achievement, but there was also evidence about the affective and behaviour benefits.
49. For example:
  - Anchoring the evidence on the impact of making connections with home learning is a meta analysis of 41 US studies.<sup>xiii</sup> The analysis found that parental involvement per se had a large effect size of 0.74 on learners' academic achievement. This included parents who would support their children with or without school encouragement. The significant finding in the study,<sup>xiv</sup> however, was that school-initiated programmes which sought to engage harder to reach parents also had a positive effect of 0.27, vindicating the efforts of schools in difficult circumstances particularly in urban areas. In addition, three studies found improvements in mathematics achievement when links were made with home life. In one of these, researchers found that children who were used to handling money at home performed better in associated mathematical tasks.<sup>xv</sup> In the second, the school combined parental involvement with peer tutoring,<sup>xvi</sup> and in the third improvements occurred when teachers discussed learners' learning and more still when parents received training.<sup>xvii</sup> This study also found that learner rates of homework completion went up as a result of 'interactive homework' sessions.
  - More discussion with parents about learners' learning also had an affective impact. One study<sup>xviii</sup> recorded significant gains in learners' self-esteem, both in the parental involvement only and parental involvement with peer support programmes. Similarly a programme aimed at inclusion for learners of all abilities, which was informed by parent-practitioner focus groups, increased self-esteem among disabled learners.<sup>xix</sup> Further evidence about the benefits of context-based curriculum experiences for enhancing learning in the English context was identified in the school-based probes and case studies.
  - Probe 1 (Assessment and curriculum development) – engaging children in dancing, singing, drawing, painting, model-making, storytelling and writing within an Indian context enhanced collaboration and enabled them to engage with the culture and history of a country very different to England.
  - Probe 4 (Curriculum innovation, participation and engagement) – learners became more actively involved in mathematics lessons and enjoyed them more where they applied their learning to real world scenarios, such as trying to make a profit on ticket sales for a sports match.
  - In the Four dwellings primary school action research report<sup>xx</sup> about curriculum innovation which included 'immersion' visits, e.g. going to an art gallery at the beginning of a topic led to increased engagement as children talked more about their learning at and home and brought their own resources from home to school.

### **The extent to which teachers incorporated context into learning 2007-2010**

50. The staff survey conducted in 2009 offered some interesting, tentative insights into differences in the use of context-based teaching among secondary practitioners. Although

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<sup>1</sup> For ease of reading, we have used the term 'parents' as a collective term for parents and persons with

questions about context-based learning were not asked directly, questions about theme-based curriculum experiences which are usually structured precisely in order to increase opportunities for context-based learning were asked and also explored via follow up focus groups.

51. When asked to indicate which of four models identified by Ofsted for developing the curriculum most resembled their approach to curriculum innovation, 30% of senior leaders, 42% of middle leaders and 39% of classroom practitioners selected 'learners exploring a theme'. This was the most popular model at KS3 for middle leaders and second most popular for senior leaders and classroom practitioners.
52. However, the model was the least popular at KS4, where only 10% of senior leaders, 35% of middle leaders and 30% of classroom practitioners said it reflected what they were doing in their school.
53. There was also evidence suggesting that context-based learning was a low priority for a sizeable minority of practitioners: 16% of senior managers, 12% of middle managers and 20% of classroom practitioners said that theme-based learning with the opportunities it affords for real world and context-based learning was not used at all in their school.
54. We explored learners' perceptions about direct connections between home and school and about connections with the wider world too. Around half the primary learners responding to our surveys in 2008 and 2009 said that their teachers asked them to bring in things from home to work with in school. A similar proportion said in 2008 that they often got people from outside school coming in to work with them (this increased to 60% the following year). In contrast, around 30% of secondary learners reported (in 2008 and 2009) that their lessons never connected to their own experiences (though a similar proportion disagreed with this)
55. Focus group discussions revealed examples of the ways in which schools, both primary and secondary, provided context-based experiences. These tended to be associated with enjoyment of learning.

*A way my school helps me learn, is that we have themed weeks every once in a while. A few weeks ago we had a 'Medieval Week'. This was very interesting as I have not yet learnt about the medieval times (primary).*

*Teachers try to make us learn by making the lessons more fun when we don't even know that we are doing work when we are. We also have fun themes like we had book week where Justin Sonper [the author of Vampirates] came in and we dressed up as pirates so they have fun themes where people come in and talk to us about our learning (primary).*

*In history, we learnt about the plague. Our teacher made it real life; we made up our own remedies and acted out the scene (secondary).*

*My school helps us to learn by encouraging us to do our best and not to be afraid to have a go at anything. Also we go on trips, do workshops and at the same time have fun. Sometimes we have people that come that are out of the school to increase our knowledge by learning us new things that sometimes help us to achieve our dreams or help us in adulthood (primary).*

*In geography, we had to work out how to make an eco-house. We had to work out how to make the lights (secondary).*

56. The school-based research found many examples of how teachers in English schools that are successfully innovating in the curriculum are designing context-based learning in practice. Teachers in these schools were able to design tasks and learning activities, which enabled them to work within the curriculum in ways which effectively linked prescribed content coverage with learning processes. In practice context-based learning often featured

as part of a broader teaching strategy which also encompassed group work and problem solving. context-based learning was a key element for teachers seeking to:

- increase learner participation;
- enhance learners' capacity to engage effectively in dialogue;
- develop learners' ability to empathise with other social groups; and
- understand their learners better as individuals in order to tailor their teaching accordingly.

57. There emerged five key approaches to planning effective, contextualised curriculum experiences:

- designing real, meaningful tasks;
- planning out of classroom experiences;
- using simulations of real tasks;
- constructing emotionally real tasks; and
- activating learners' recent experiences.

### **Real and meaningful tasks**

58. Our school-based research (probe 4) illustrated how teachers paid attention to planning curriculum experiences which were real and meaningful to learners. For example, one school study<sup>xxi</sup> showed how teachers made use of topical issues. Here learners evaluated articles about the Swine Flu pandemic in science and in English collected and discussed articles covering the European elections in a series of lessons about 'Britishness'. As well as using media to link learning to young people's lives outside school, teachers also encouraged them to be reflective and critical about what they read in the press, seek alternative perspectives and challenge their own perceptions and preconceived ideas.

### **Out of classroom experiences**

59. Real world experiences are an important means of making the curriculum meaningful. Across our school-based research (probe 4), we encountered a range of approaches to learning beyond the classroom. For example, one school designed a programme of twelve 'deep learning days' during the school year. Activities included visits to a farm, city firms, museums and 'take your daughter to work day'. The programme was intended to develop higher level thinking skills, foster independent learning, encourage creativity and challenge learners of all abilities over a sustained period of time. Teachers used a variety of tasks in preparation for and as follow up to out of classroom visits to fully exploit their potential for learning.

### **Using simulations of real tasks**

60. Many aspects of the curriculum cannot of course be experienced physically within the school environment but must nonetheless be introduced there. Our school-based research (probe 4) found many examples of teachers simulating experiences via computers or role play. For example, teachers used computer tasks that incorporated video clips of real life events designed to promote discussion between learners about force and motion. The clips included a tennis ball rolling slowly off a table and an astronaut on the moon releasing a hammer and feather simultaneously. Pairs of learners were asked to predict and discuss what they thought would happen to the flight path of each projectile before watching the video clip.

### **Emotionally real tasks**

61. Teachers in several of our probe schools (e.g. probe 4) connected with their learners on a personal level and used their knowledge of learners as individuals to shape both content and teaching and learning approaches. For example, an English teacher asked learners to

bring in family photos in order to structure a discussion about heritage. Similarly, recognising her learners' affinity with both technology and popular music, another English teacher designed a task which involved the learners choosing a piece of music to complement a poem and explaining their choice in a podcast.

#### **Activation of learners' recent experiences**

62. By activating recent experiences, teachers were able to explore learners' opinions, likes and dislikes in general terms. This approach was frequently used as a lesson starter to engage learners from the beginning of the lesson. For example, a geography teacher asked learners to bring in some food packaging from home and to discuss in groups what they had eaten the previous day as a way of introducing the topic of 'food miles'.

#### **Ways of connecting the curriculum with learning in the home 2007-2010**

63. Exploring curriculum connections with home learning did not emerge as a strong feature in the school-based research, although several probes mentioned in brief the role of relating to home and community in improving outcomes for learners:
  - Probe 1 (Assessment and curriculum development) – teachers encouraged a range of learning relationships, including making links with parents, as a means to develop new assessment and evaluation opportunities.
  - Probe 4 (Participation and engagement) – schools worked with parents and offered them advice and support in order to create the right learning environment at home. In addition, learners were encouraged to bring within the school context home-specific attitudes and behaviour. In a drama lesson, for example, they were asked to consider how a dispute over stealing a mobile phone might feel to them, and what the reactions at home would be, as a way of encouraging them to take on the perspective of the adult. Learners were also asked about recent experiences, opinions, likes and dislikes as a way of activating their thinking at the start of lessons with relation to the focus.
  - Probe 6 (Narrowing the Gap) – one primary school developed its curriculum to increase its relevance to different groups of learners and their parents. One initiative involved the creation of a 'Somali Club' in order to engage parents of Somali children and counteract some prevailing negative stereotypes. Somali children ran an assembly for over 300 other children and Somali parents engaged with teachers to plan their children's learning.

#### **Ways of connecting the curriculum with learning in the home – evidence from the international research**

64. Effective ways of connecting curriculum experiences with learning in the home as identified by research and practitioners included:
  - curriculum-related learner-parent joint activity;
  - community service;
  - using homework to prompt parent/child dialogue about learning; and
  - home-school communication.

#### **Curriculum-related learner-parent joint activity**

65. Evidence from the reviews highlighted the learning benefits when parents and children worked together, particularly in mathematics and literacy. One study<sup>xxii</sup> described how parents in a London borough shared reading activities with their primary aged children. Parents were encouraged to listen to their child reading several times a week. The researchers worked hard at developing relationships with the parents. They met them at



parents' evenings, at home, and at the school gate and occasionally helped parents where necessary.

### **Community service**

66. Our research evidence highlighted the efficacy of service learning, particularly when it was carefully worked out so that curriculum learning aims were threaded into the community activities. In these contexts subject achievement gains went hand in hand with gains in self confidence. For example, a study<sup>xxiii</sup> described a 'Community Connection' programme from the US which provided opportunities for young people to form ties with the community through service. It helped them develop as responsible citizens, gain a sense of ethics of serving others and feel a sense of accomplishment.

### **Using homework to prompt parent/child dialogue about learning**

67. The systematic reviews and the high quality studies<sup>xxiv</sup> they rest on highlighted strategies for promoting conversations between children and their parents at home. Evidence indicated the learning benefits for young people when homework was used as a stimulus for such conversations.

### **Home-school communication**

68. The evidence suggests that schools which made consistent efforts to maintain communication with parents about learning saw positive benefits for their learners. For example, in one of the studies included in the second review<sup>xxv</sup> parental involvement took the form of regular home-school communication that emphasised the children's achievements. These took the form of celebrations by parents of their children's efforts at school and conversations between parents and their children about the children's work in mathematics at school. This involvement by parents also raised the children's self-esteem significantly.

### **Key messages for this theme**

69. The international evidence presented in this section indicates the value of context-based learning as a vehicle not only for engaging learners with the curriculum, seeing its relevance to their lives beyond school and enhancing learners' subject knowledge, but also for developing skills in reasoning and critical thinking. [Like the real world it is simulating, context-based learning draws together many threads – and thus serves many purposes. For example, it often entails collaborative learning and dialogue and involves learners in using skills from different subjects in combination to tackle real world challenges. The wide variety of probe examples of how the context-based curriculum is enacted shows the ways in which context-based learning can form a framework for collaborative and dialogic learning which learners find engaging and motivating. The schools which provided evidence for this aspect of curriculum design illustrated just how imaginative practitioners could be in introducing a context for learning, and how well they did this].
70. The snapshot provided by the staff survey indicates that context-based learning was a consideration in curriculum planning for KS3 in about a third of secondary schools in 2008-9, as reported by senior leaders, but that it ceased to be a priority for all but 10% of schools during KS4. The survey indicated that at this stage other curriculum design issues took priority, in particular developing learning pathways to support learners' progress to their post-compulsory careers. It may also be, however, that there are other factors at play, such as an increase in teaching to the GCSE exams, or a belief that context-based learning is more about play than applied learning and is therefore inappropriate for older learners.
71. The examples of schools making connections between the curriculum and learners' home and community life provided in this section reflect three broad categories:

- parental engagement in learning set by the school, as in interactive homework activities;
  - the school creating conditions for learners to draw on their experiences outside of school to support learning in lessons, as in the example of learners bringing in food packaging to explore air miles; and
  - community-based tasks.
72. The evidence of the benefits of home-school links, and in particular the meta-analysis<sup>xxvi</sup>, focuses mainly on the first category. The meta-analysis<sup>xxvii</sup> underlines strongly the value of parents engaging in their children's learning. This may be regarded as a common sense finding but not necessarily one that was being systematically exploited in schools across the country in 2008-9. More significantly for schools seeking to engage parents more in their learners' learning are the findings that such programmes are linked with improvements in academic achievement.
73. To summarise: the key message for school practice is that creating opportunities for learners to make connections between the school curriculum and the 'real world' promotes effective learning. Schools could do more to engage parents in their children's learning and to create curriculum experiences in which learners draw on outside experiences. It is also likely to be useful to increase curriculum experiences organised around community based tasks.

## Theme 2. Creating curriculum experiences that build on learners' existing knowledge, understandings and skills<sup>2</sup>

### The benefits

74. Research from systematic reviews of the international evidence base<sup>3</sup>, shows us that learners often start with conceptual understandings that are partial or even flawed, which, if they are not addressed, may well inhibit achievement and progress. Conversely, teaching approaches which build on what learners know and can do already can result in significant learning gains. This finding is reinforced in specific evidence from our 2008 research review about the ways in which teachers construct (or fail to construct) challenging curriculum experiences. The international evidence base tells us that effective curriculum planning depends on teachers having a good knowledge of their learners and their needs. Achievement gains are particularly well evidenced as benefits flowing from careful planning for building systematically on learner needs. But when teachers set out to establish where their learners were starting from, learners also:
- developed increased motivation and enjoyment of the curriculum;
  - built up their confidence; and
  - avoided misconceptions which can make it difficult to absorb and make sense of subsequent ideas and facts that depend on good prior understandings.
75. The review about how teachers construct challenge, in particular, found that diagnosing learners' starting points in terms of existing knowledge and skills, in order to plan for building on these, was the most significant of the key judgements teachers make that affect the level of challenge within their curriculum offers. This is reinforced by our school-based research, particularly Probes 1, 2 and 4, which showed that schools which were successful in curriculum development paid particular attention to establishing learning needs and planning the curriculum to accommodate them.
76. In science, for example, one study<sup>xxviii</sup> explored the difference in outcomes for two classes of 7th grade learners when one group received an intervention targeted at both metacognition<sup>4</sup> and content intervention, the other their normal curriculum. In the intervention class the learners were asked to indicate what prior knowledge they had about a theme in an ecology unit and say how helpful they thought their prior knowledge was. They were presented with new data that challenged their existing views. There was evidence that the beliefs learners brought in from everyday life were difficult to shake even when scientifically accurate data were presented to them. Post-intervention tests showed significant gains for the intervention group compared to the control group.
77. In mathematics, another study<sup>xxix</sup> investigated the effects on 40 1st grade teachers and their learners of a program designed to provide teachers with knowledge about their learners' thinking. Experimental learners exceeded control learners in number fact knowledge, problem solving, understanding and confidence in problem solving.

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<sup>2</sup> For this theme, and one or two others, the majority of the citations are from the United States. This is because a key criterion for inclusion in the review was the presence of high or medium quality evidence about impact on student learning. This research is expensive and the great majority of such research is carried out and published in the United States

<sup>3</sup> Particularly in mathematics and science

<sup>4</sup> Metacognition is defined as knowing about knowing; e.g. when to use particular strategies for learning or problem solving.

78. But the evidence is not confined to mathematics and science. It relates to a number of subjects and curriculum contexts. We offer an example below from the US and there are many others.
79. The US study<sup>xxx</sup> evaluated a 2 year metacognitive intervention programme aimed at developing practical intelligence for US middle school learners in reading, writing homework and test taking. The study involved 514 nine to thirteen year olds and concerned practical knowledge about being able to study and learn effectively in school. Learners were engaged in thinking about what they are already familiar with, such as the 'Knowing Why' module where they tackled questions like 'How is the writing you do inside of school like the writing you do for other reasons?' 'Why do you go to school?' 'Why are tests used in school?' Also for example, the 'Knowing Self' module involved learners in assessing their own work and their personal strengths and areas for development. Experimental learners showed significant gains in what the researchers call practical intelligence: reading, homework, writing and testing and in 'academic intelligence': reading, writing and academic summarising.

### **The extent to which teachers found out what learners already knew and what they needed to be able to do next 2007-2010**

80. The learner surveys showed that teachers became increasingly skilled at identifying and building on learners' existing knowledge and understanding (especially at primary level) in the eyes of their learners across the three years of this work. By 2010 over 80% of primary learners said that teachers were good at finding out what they already know and over 90% said that teachers were good at helping them to understand what they need to know and what they need to be able to do next. Secondary learners were less likely to say their teachers tried to find out what they already knew, although this changed over the life of the survey. In 2008 only 44% thought that teachers were good at finding out what they already knew. By 2010 this had increased to 63%.
81. This represents positive progress because both primary and secondary focus group teachers considered that diagnosing what learners know and can do already was difficult because they lacked time to:
- listen to learners' explanations in depth; and
  - observe learners carrying out activities.
82. A number of teachers also said that their learners had difficulty in articulating their thoughts about their learning. They suggested that metacognitive skill development (thinking and talking about learning) should be encouraged from the early years foundation stage.

### **Ways of diagnosing learners' starting points and building on them**

83. There is extensive evidence from both the reviews and the school-based research that effective planning of curriculum tasks and materials requires an understanding of learners' individual starting points. Understanding what learners know and can do already is also an important aspect of constructing challenge in the curriculum. A case study of teachers of gifted and talented learners described some of the ways in which the teachers judged individuals' starting points: "I do criterion reference testing here... it lets me see that [Gloria] is spelling at third grade level while [Ashley] is spelling at the fifth grade level... I want to start with their grade placement level so they can learn the rules, then I accelerate"<sup>xxxi</sup>. In other studies teachers used questioning: "Sometimes I ask students to explain their thinking... I will ask him or her how s/he came up with that answer. That helps me learn their thinking"<sup>xxxii</sup>. However, this was not always easy. One teacher in the same study appreciated that the learners think differently from each other but said that the size

of the class made it difficult for her to address these differences. Her solution was to form “rough groups of students in her mind” whom she believed to be thinking similarly.

84. Teachers also found diagnostic judgements difficult in identifying mathematically gifted learners. In one study of 300 learners, teachers found the process of selecting a group of gifted mathematicians to be one of the most difficult aspects of the project<sup>xxxiii</sup>. They had difficulty in observing the attributes of mathematically gifted learners within the recommended structure of mathematics lessons as suggested by the National Numeracy Strategy. They also felt uncomfortable about basing judgements on test achievements because they believed that their learners’ performance could have been affected by elements in their background such as social deprivation, disadvantage, low expectations and the lack of adult support. Hence they found the judgement difficult both from an operational and from an ethical perspective.
85. A research report on effective teaching and learning for learners in low attaining groups found that teachers overcame some of the diagnostic (as well as the teaching and learning) problems by teaching in smaller groups. Teachers drew curriculum resources from multiple sources. These resources incorporated a range of cognitive demands to allow learners to select the level of challenge<sup>xxxiv</sup>.
86. The school-based research also provides some helpful illustrations of strategies that teachers who are successful in curriculum innovation use to plan curriculum experiences so that they can identify and build on their learners’ starting points. We offer some examples from the school-based research below.
87. Probe 1 (assessment and curriculum development) described how one teacher used a ‘working board’ to communicate learners’:
  - initial thoughts on a topic;
  - early ideas about what to do; and
  - propositions about the current topic.
88. The working board was used as a springboard for dialogue between learners and teachers and thus became an assessment technique that provided insights into the dynamic development of learners’ ideas, existing knowledge and learning perceptions. This in turn helped teachers to direct and inform their ongoing work. The development and use of the work board was viewed by the teachers as an important formative assessment strategy.
89. White boards were also used as tools for establishing individual learner’s knowledge and understanding. For example in one of the probe schools (probe 1) the teacher began a mathematics lesson with a quick mental session starter. The arithmetic problems were presented in rapid succession on the interactive whiteboard (IWB), the learners scribed their responses onto individual, small, wipeable boards. They held up their solutions providing the teacher with instant feedback on their capability.
90. The small whiteboards were used across the school in a number of learning situations. One teacher described how these then enlightened her planning or direction of teaching in subsequent lessons. Reflecting on the various ways she uses the whiteboards, she explained:

*Personally I would use them for both [critical and creative thinking]. I would get them to hold them up. For starters, “How many adjectives can you think of to describe a fairground or verbs to describe a running race?” and brainstorming to [capture] ideas. [We] gather all our knowledge and put it up there [on the learning board] so they can see it all the time.*
91. In one Y6 lesson the aim of the lesson was to challenge the children’s views about creativity and develop their understanding of its importance in learning. At the beginning of the

lesson, the teacher was explicit about her intentions, linking backwards to previous work they had done on creativity and forwards to the end of term learner evaluation, asking them explicitly, “What’s the point of doing this?” and stating, “It’s about you and your learning”. She used four tasks to guide them to examine creativity.

92. For the introductory activity she used a skipping rope suspended across the classroom. The children were told it represented a scale of ‘zero’ to ‘very creative’ along the length of it. They were asked in turn to stand at a point along this scale and to explain their reason for positioning themselves there. Linda used this to assess the children’s judgements of themselves “because there were some learners she wasn’t sure about”. The teacher intended to use the rope activity again at the end, because

*some of the girls who deemed themselves absolutely, unbelievably creative because they were good at art and craft ...who put themselves at the end of the scale...I would like to have seen re-position themselves somewhere in the middle...and some people who put themselves down at the end....move to the middle, like the dyspraxic boy who is hopeless at holding a paint brush.....to place himself in the middle because he could be creative in different ways.*

93. The same teacher used a questionnaire to explore children’s social and emotional capabilities and skills before she taught this lesson. Its findings indicated their constrained views of creativity and its importance in learning. She structured her subsequent teaching tasks to engage them in different ways of describing creativity.
94. Probe 2 (dialogue and curriculum development) showed how a group of teachers built on their learners’ starting points through dialogue. Teachers interacted with learners in a non-directive way in order to help them focus more clearly on the problem to be solved and to challenge their understandings and perspectives.
95. Probe 4 (curriculum innovation, participation and engagement) found a number of tools and protocols teachers used to encourage learner participation and engagement and thus secure good access to curriculum content. For example, mind maps were used to:
- summarise learners’ starting points at the beginning of lessons, often as an outcome of pair work or whole class discussion;
  - highlight particularly relevant points; and
  - add new ideas, concepts and links.

### **Key messages for this theme**

96. The starting point for this aspect of curriculum development came from the initial map of the evidence. Further evidence of the learning benefits of planning curriculum tasks based on the learner’s own knowledge and understanding came from the 2009 review where it emerged as a key finding about planning for the construction of challenge in the curriculum. School-based research helps to illustrate some of the different ways in which teachers in successful schools identify their learners’ starting points and take them into account in curriculum planning and enactment. Yet there is also evidence (from the focus groups and from the 2009 review) that this is a challenging aspect of curriculum planning and enactment. The obstacles identified ranged from practicalities such as the need to do this well for the numbers of learners involved, through teachers’ difficulties in spotting the moments when it is important to move from central guidance to handing over increasing responsibility to learners. They also included concerns amongst teachers about the learners’ lack of skills in articulating their own thinking and starting points.
97. In policy terms, there are issues here in terms of encouraging the development of skills in articulating thinking and existing understanding from an early stage. For practitioners there are issues around the need for effective CPD in appropriate pedagogies and in the

development of the excellent subject knowledge required to implement them. CPD was a consistent theme across all our evidence strands. In this case it could also be effective in helping teachers to learn how to develop strategies for overcoming some of the perceived obstacles to establishing their learner' starting points.

98. To summarise: the key message for school practice is that planning curriculum experiences which help teachers identify and build on learners' starting points effectively promotes learning. It is also challenging for teachers. Appropriate CPD has an important role to play in addressing this challenge.

## **Theme 3. Structuring group work in teaching and planning for effective talk as a means of ensuring all learners can access the curriculum**

### **The benefits**

99. Our three systematic reviews of the international literature, with their extensive evidence about strategies with positive impacts for young people, show that structuring group work is an important ingredient in translating curriculum aims into effective learning experiences. Benefits ranged from significant improvements in cognitive reasoning, problem solving and achievement to enhancing learners' perceptions about different subjects.
100. For example:
- One study<sup>xxxv</sup> found both increased cognitive achievement (involving learners in structured small group, enquiry-based tasks) and the development of more favourable attitudes to the subject (in this case, physics). Improvements in learners' perceptions of subjects was also noted in the 2009 (Challenge) review – for example, collaborative enquiry in mathematics led learners away from viewing the subject as 'boring' to one that 'makes you think'<sup>xxxvi</sup>. Through enquiry-based curriculum experiences learners' views of learning changed from being a process of receiving knowledge to one that uses investigation as a tool for accessing and interpreting it, and this change was linked to improvements in their work.
  - Learners' reasoning and problem solving performance was also linked with careful structuring of group work as part of creating effective curriculum experiences. This involved both the structured development and use of exploratory talk and explicit teaching of questioning and listening skills. For example, the results of learners who had been involved in structured group work increased when compared with control groups in two studies<sup>xxxvii xxxviii</sup>. There was also evidence in these studies that participants in the intervention developed improved reasoning and problem solving and that groups themselves improved their performance in problem solving. These developing skills in turn expanded the range and depth of their curriculum experiences.
101. Findings about the importance of group work in the international evidence base are echoed in our school-based research in England as part of this project.
102. Probe 2 (dialogue and curriculum development) pointed to a number of affective benefits (i.e. emotional and behavioural) for learners, associated with structured collaborative group work<sup>xxxix</sup>. These included:
- greater focus and motivation towards learning;
  - improved emotional development;
  - enhanced confidence and self-esteem;
  - more independence in learning;
  - enhanced ability to make good decisions about their learning; and
  - emerging leadership skills.
103. Probe 4 (participation and engagement) also highlighted group work as an essential feature of enquiry-based learning an approach that was also linked to positive impacts on learner engagement and independence in learning. Although enquiry-based learning was also thought to have positive impacts, schools that were successfully innovating in the curriculum approached enquiry-based learning as a collaborative learning process. They saw, for example, the harnessing of different perspectives in identifying useful questions



and relevant data and in interpreting data as being crucial to maximizing the potential of enquiry-based learning. They also saw enquiry-based learning as an excellent vehicle for promoting exploratory talk.

104. Probe 5 (wellbeing) showed how group work with the explicit intention of enhancing student wellbeing as well as learning was planned and managed within curriculum experiences. For example, group configuration was constructed to suit the task, occasionally in friendship groups, but more often based on a mix of skills and/or dispositions that were often made explicit, “Hayley, we need your perfect circle making skills.”
105. Probe 6 (narrowing the gap) highlighted opportunities for developing learner group work skills in real life context. During a residential learning experience, children were given interdependent tasks, requiring them to work collaboratively to complete a cognitively (‘How not to break an egg when throwing it from a certain height’) or physically (climbing a steep and slippery hill) challenging activity.
106. In the next section of the report, we also present evidence about how learners experienced group work over the duration of the study, which includes evidence of substantial changes in learners’ perceptions.

### **What does “structuring group work” really mean?**

107. Evidence from both the reviews and the school-based research showed that the effectiveness of planned and genuinely collaborative learning for securing access to curriculum content depended on teachers:
  - providing clear guidance for group working;
  - explicitly teaching and modelling group working skills;
  - designing interdependent tasks and activities that helped learners practice and develop the skills required for working collaboratively; and
  - designing collaborative tasks that helped learners work productively to develop subject knowledge and understanding.
108. Not only did the reviews and the school-based research reinforce these benefits; they also highlight links between the absence of structured group work and lower attainment. In the 2009 survey learners who self-reported lower National Curriculum levels of attainment were less likely to work in groups to solve problems than their peers.
109. There was also evidence from across the reviews that learning that was not genuinely collaborative and, where there was no specific requirement that learners worked together and depended on each other, was less effective in developing knowledge and understanding – whatever aspect of the curriculum was involved. For example:
  - in studies and cases of “group work” where there was no link with positive learner outcomes, the learners tended to work individually, albeit side by side, on tasks for their own ends, even when learners were organised into groups<sup>xi</sup> ;
  - in some cases, teachers gave learners too much responsibility and not enough guidance or support for their thinking<sup>xii</sup>; and
  - understanding how much responsibility to give to learners and structuring tasks to enable them to use it to take charge of their own learning about a given topic or subject also emerged in the Challenge Review as an important and difficult judgement which teachers had to make. This is explored in more detail in the challenge section of this report.

## **The extent to which learners' experiences of the curriculum involved structured group work in schools in general and in schools that were successful curriculum innovators**

110. The learner surveys from 2007-2010 provided a picture of the extent to which group work features in learners' classroom experiences in England. Group work increased substantially in frequency at both primary and secondary levels over the three surveys. For primary learners this grew from 47% in 2007-8 to 69% by 2008-9. By 2010 87% of learners were reporting that they were involved in group work every day or a few times a week. At secondary level, only 44% of learners in 2007-8 said they had opportunities to work in groups with other learners. In 2008-9 this grew to 57%. By the 2010 survey 77% said they worked in groups solving problems a few times a week or every day or a few times a week. At secondary level, only 44% of learners in 2007-8 said they had opportunities to work in groups with other learners. In 2008-9 this grew to 57%. By the 2010 survey 77% said they worked in groups solving problems a few times a week or every day<sup>5</sup>. Learners also valued these opportunities and viewed group work positively as the focus groups showed.
111. Consistently over the three years, the subjects where secondary students reported most group work were PE, English, music and drama. The focus group discussions helped cast light on what kinds of tasks were being offered. For example, in two schools, learners consistently agreed that English was a subject where learning in groups was structured and active: "There are a lot of practical activities in English such as role playing". One learner described the positive reasons for group work in PE "The PE teacher gets people he knows are in clubs, like cricket, and puts them in teams with others so they can act as a coach."
112. The subjects where secondary students reported least group work were ICT, art & design and mathematics. One of the focus group participants put it this way: "We never do group work in mathematics; it's always independent – that's why it's boring".
113. The striking increases in reported levels of group work took place during a period when there was extensive change at system level including:
- The new Secondary National Curriculum brought a "Big Picture" emphasis on linking together planning of curriculum content and its enactment through teaching and learning strategies that take account of the entire planned learning experience.
  - It also brought a new emphasis on personal, learning and thinking skills and encouragement to teachers to increase the extent of practical and applied curriculum experiences.
  - For the primary curriculum the period covered by the surveys was accompanied by a significant new emphasis on Excellence and Enjoyment and by the review of the Primary Curriculum and the accompanying extensive consultation with head teachers, governors and parents.
114. All of these factors may well have played a part in this substantial change in reported levels of participation in group work in a range of subjects. The substantial evidence from the international reviews about the importance of CPD in ensuring positive outcomes for young people from curriculum reform suggests, in particular, that the planned investment in CPD that accompanied the new secondary curriculum and the 14-19 reforms may also have been an important factor that is supporting change on this scale.
115. But although we collected a range of evidence about the increasing prevalence of group work and the positive contribution it has played internationally in supporting learning gains

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<sup>5</sup> There was a question format change in 2010 but the growth trend was consistent across all three years of the survey.

for young people, there is no suggestion that it should be or indeed was the only approach to supporting learning. As a group of learners in the primary focus groups in 2010 remarked working on their own was also really important as it helped their teachers get to know what they think. And some young learners need to develop group work skills before they can experience the increases as a positive experience. As one learner put it “I prefer to work on my own because it is far nicer because you can use all your own ideas and you don’t have to share them with anyone else.”

## **Ways of structuring collaborative group work**

116. There is evidence about how to structure group work effectively for curriculum delivery across all the data sources. Both the reviews and the school-based research identified strategies for structuring collaborative work so that it enabled effective discussion and thinking to take place. These included:

- promoting appropriate behaviours in group discussion and joint problem solving;
- designing thinking and talking frames related to the curriculum topic/subject;
- designing opportunities for talk and group work; and
- planning for use of talk partners to promote confidence.

117. An example of each strategy is provided below. There are many more examples of approaches to structuring group work in the map and the review and probes 1, 2, 4 and 5. The specific strategies used by teachers and group work skills and behaviours highlighted by the systematic reviews of the international evidence include:

- building exploratory talk;
- activities for developing listening skills;
- collaborative problem solving;
- teaching learners to respect other’s views; and
- justify and explain, build on each others' explanations, and reach shared understandings.

## **Promoting appropriate behaviours in group discussion and joint problem solving**

118. Evidence from the international evidence base already cited<sup>xliii</sup> highlights behaviours that enable learners to access the curriculum. Children were taught specific skills and strategies for effective listening, giving information, building on each others’ contributions and reaching an informed consensus. Teachers provided ground rules to support learners as they learned to deploy these skills productively in developing their knowledge and understanding. The teachers took the learners through a series of lessons to show how the rules worked. The rules were based on evidence about building exploratory talk in which partners engage critically, but constructively, with each others’ ideas. In exploratory talk, statements and suggestions are offered for joint consideration. These may have been challenged and counter challenged, but challenges were justified and alternatives were offered.

119. This well established principle for mobilising group work as a way of securing wide access to the curriculum was also illustrated very practically and with rich detail in Probe 5 (wellbeing). This study showed how teachers used whole class teaching to model how learners should interact with one another in their groups and to model some of the vocabulary learners might use and might avoid; *“I won’t let them tease or mistreat each other, even in fun.”* In a history lesson we saw the teacher create a calm and non-judgemental environment to encourage students to speak and to pay attention to each other: *“Let’s be quiet now because Leanne’s going to say something.”*

### **Providing thinking and talking frames to scaffold**

120. Both the second review and the school-based research highlighted the importance of tools and protocols for realising the curriculum through group work. For example, Probe 2 (dialogue and curriculum development) showed how some teachers promoted effective group discussion as a curriculum tool through the use of particular phrases, such as:

- "convince me ..."
- "how would you convince someone else that ..."
- "explain why you think that ..."

### **Opportunities for talk and group work across the curriculum**

121. There was also evidence in both reviews of the learning benefits of planning to create and capitalise upon opportunities for embedding structured dialogue across the curriculum. Probe 2 (dialogue and curriculum development) showed how teachers recognised the importance of regularly promoting learners' speaking and listening skills and embedding them in all subjects in order to promote access to the curriculum. These skills secured such access by ensuring that learners felt confident about speaking in front of others and commenting on what they had heard as well as understanding the importance of listening and taking turns. Effective collaborative skills meant learners could take advantage of regular opportunities to work together on a range of tasks in different subject areas.

### **Using talk partners to promote confidence**

122. Developing self confidence was an important element in promoting effective learning behaviours and thus securing access to the curriculum. Self confidence was also motivating, as the challenge review showed. The ways in which this is being implemented in schools and their effective curriculum innovators is illustrated in Probe 2 dialogue and the curriculum development report which shows how a Year 6 teacher who recognised the connection between talk and confidence and subsequently more successful engagement with the curriculum, encouraged learners who were reluctant to speak to rehearse with a partner: 'We do a lot of work involving talk partners, particularly with children who lack confidence and might want to share their ideas with another person before feeding back in front of the whole class ... We try to vary and do as many different types of groupings, pairing, independent work as possible'.

### **Key messages for this theme**

123. There is extensive international evidence about the benefits of structured groupwork. Evidence from England between 2007 and 2010 shows how teachers in schools that are effective curriculum innovators all value and make use of carefully planned and structured group work and collaboration as a way of:

- securing access to the curriculum;
- promoting young people's in depth engagement with many (though not necessarily all) subjects and the curriculum as a whole;
- enhancing reasoning and problem solving skills; and
- increasing attainment and achievement.

124. There is also evidence from those schools that are successfully harnessing and deploying these benefits, that structured group work helps to:

- enhance emotional development;
- improve confidence and self esteem;
- support increasingly independent learning through good decision making; and
- increase learners' leadership skills.

125. This section shows us too that there is both international evidence and school-based evidence that where group work is not being used or is used in name only<sup>xliii</sup>, the benefits for learners do not accrue. It is therefore reassuring to see the evidence that over the three years from 2007-2010, learners from across the country as a whole have reported very substantial increases in the use of group work. Whilst we cannot tell from survey data exactly what structures were in place, the way our focus groups learners exemplified their increasing experiences of group work suggest that the forms of group work being developed may well be in line with the structures suggested by successful schools and by the international evidence base.
126. We have strong international evidence about the importance of structured group work for learning outcomes but we do not have evidence either way about the most effective balance between individual and collaborative learning. Neither our school-based research nor the international evidence provide a picture of a curriculum entirely enacted through collaboration. The suggestion is rather that substantial and appropriate use of planned and structured collaboration significantly enhances both learning experiences and outcomes.
127. These developments have taken place during a period of intense policy change and implementation. Nonetheless, it is unusual and interesting to note the close match between policy intentions and widespread learner experiences that has developed in a relatively short timescale. A good deal of education research<sup>xliv xlv</sup> points to the difficulties and timescales needed to align practice on the ground with the goals of policy reforms. Evidence from our surveys also highlights the time it takes for similar alignment between classroom level practice and school leadership plans for curriculum change (probe 7). The section on CPD in this report explores a little further some of factors that may have been important in securing this rapid change including:
- providing staff with various forms of support and development, e.g. multiple in-service training days, ongoing one to one coaching and mentoring from the head teacher or curriculum change leader for individual members of staff, experimentation with new approaches, tools and resources to model and support curriculum design and enactment;
  - setting up learning partnerships between colleagues to collaboratively implement development and change;
  - monitoring of curriculum development through school leaders' own involvement and use of existing mechanisms and structures in more than one way, i.e. both to provide support and challenge.
128. To summarise: the key message for school practice is that structured collaborative group work is effective in terms of achievement, engagement and conceptual development. It is an increasingly common feature of learners' curriculum experiences in England in 2010. Strategies adopted by successful schools and evidenced empirically from the international research base included:
- providing clear guidance or rules for group working; and
  - creating curriculum tasks and activities that are genuinely interdependent and which help learners develop the skills they need to work collaboratively in a productive way.

## **Theme 4. Fostering a less compartmentalised approach to the curriculum to promote conceptual development and to encourage cross-curricular learning.**

129. There was less evidence from the international knowledge base on this theme than the others<sup>6</sup>. However, although this was not the focus of any of our school-based research probes, we found examples of curriculum planning in successful schools, which paid attention to the benefits for learners of integrating skills and content learning across subject divisions.

### **The benefits**

130. The reviews and probes highlighted benefits to learners of developing a less compartmentalised approach to the curriculum in order to allow time and space for cross-subject conceptual development and to integrate cross-curricular learning. There was some evidence from the first two reviews that this was an effective approach to curriculum planning, both at primary and secondary level. Three types of strategies were particularly effective:
- integrating skills with content;
  - cross-curricular strategies (secondary); and
  - using a thematic approach (primary).
131. These were important strategies for extending and deepening conceptual development. They helped overcome the difficulty learners sometimes had in transferring thinking and learning from one subject to another – such as being able to draw graphs (a skill learned in mathematics) in science and geography or plan a piece of writing (a skill learned in English) in history. The benefits of such approaches translated into measured learning gains in several of the review studies. As the review highlighted<sup>xlvi</sup>, learners in an experimental group participated in an interdisciplinary, moral education programme, implemented by six teachers in languages, history, French, mathematics, science, art and music. The group showed significantly greater gains in historical knowledge of the period plus greater increase in reasoning about human relationships and implications of one's actions.
132. Similarly the review<sup>xlvii</sup> points to the use of a play as a medium for learning in science which draws together dramatic and content elements. The proportion of learners who could describe and explain the pros and cons of genetic mapping rose significantly from pre to post test.
133. Over the three years of the learner survey, there was a steady rise from 48% in 2008, to 56% in 2009 rising to 63% of secondary learners who felt that teachers often made connections between different subjects.
134. In the staff survey, we asked about teacher engagement in joint planning and delivery within their own subjects and between them. Joint planning between subjects was seen by 48% of senior leaders as a monthly activity, whereas 65% of middle leaders thought this was only annual. Over 30% of practitioners thought that joint planning never happened (but nearly half thought it was annual). Unsurprisingly there is more joint planning activity between departments and phases than just delivery. Slightly more puzzling though is the disparity between school leaders' sense of how much joint delivery does actually take place. However, over 50% of senior leaders (and 40% - 60% of middle leaders) thought that joint

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<sup>6</sup> The most likely reason for this is that we included only systematic reviews in the studies we retrieved, and in turn only those studies from the systematic reviews which had been included in the synthesis for the actual review question. (i.e. specific to subjects such as science, mathematics etc).

delivery was occasional (e.g. annual) whilst nearly 40% of practitioners thought joint delivery between subjects was occasional and a similar proportion said that it never happened.

135. Examples of the three main types of curriculum approaches identified from the international evidence base and the probes are illustrated below.

### **Cross-curricular strategies**

136. Examples of cross-curricular strategies in the second review included a study of nature led by a science and an art teacher and a study of persecution during World War II which involved English, history, French, mathematics, science, art and music teachers working together. In the nature programme<sup>xlviii</sup>, 16-18 year olds were involved in learning outside the classroom. Activities included hiking, animal studies and real world science. For one activity, the learners were given the task of collecting different plants, labelling them and presenting them in an aesthetically pleasing way. Virtually all the learners said the programme made learning more enjoyable.
137. In the study about persecution<sup>xlix</sup>, each teacher gave secondary learners the chance to experience how minorities were treated during World War II through the medium of their particular subject. Learners not only gained historical knowledge of the period, but showed an improved ability to reason about human relationships and the implications of one's actions.

### **Using a thematic approach**

138. Probe 1 (assessment and curriculum development) described how a primary class was immersed in a thematic approach for a week that embraced the topic of India in a variety of ways. The children were guided in developing many skills including dancing, singing, drawing, painting, storytelling and writing, all within an Indian context. At the beginning of the week, the teacher dressed in a Sari to set the context of the activities for the week. She provided an information board and displayed various artefacts and books from and about India around the room. Immersing the learners in this way stimulated their imaginations and enabled them to relate to the topic and engage with the cultural and historical aspects of a country very different to England.

### **Integrating skills with content**

139. Teachers at one primary school (described in the action research study, 'Moving towards a more innovative and creative curriculum') identified the key learning skills that the children needed to improve on during a topic as well as the required content knowledge. These skills were key life learning skills which would enable them to acquire knowledge independently, such as communication, application of number, information technology, working with others, improving own learning and performance, and problem solving. Teachers in another school (described in probe 3) threaded five competencies through humanities, technology and English in the Year 7 curriculum. The competencies were: citizenship, learning, information handling, managing people, and managing situations.
140. Although there were fewer actual examples of curriculum planning which allowed for integrated conceptual development between subjects, there was clear evidence from the international research base that this was an effective way to promote learning. Examples from the research literature and from the school-based research all involved teachers in joint curriculum planning. There may well be structural and timetabling obstacles involved in this type of planning – although (see section on CPD, leadership and change management) there is also evidence of the efficacy of such joint planning for staff professional development.

## **Key messages for this theme**

141. Evidence from both the international and the school-based research revealed the importance of planning learning across the curriculum in order to promote depth in young people's conceptual development. Planned curriculum experiences, which made connections between subjects through cross-curricular strategies or thematic approaches, were also important for overcoming the difficulty learners sometimes had in transferring thinking and learning from one subject to another.
142. Examples from the international evidence base and from the school-based research all involved teachers in joint curriculum planning. There may well be structural and timetabling obstacles to this type of planning, although there is also evidence of the efficacy of such joint planning for staff professional development – CPD.
143. To summarise: the key message for school practice is that planning learning across the curriculum promotes depth in young people's conceptual development. Involving staff in joint planning is an effective way of organising the curriculum for in depth conceptual development and driving forward CPD.



## Theme 5. Engaging learners in assessment

### The benefits of engaging learners in assessment

144. The school-based research yielded evidence which illustrated the benefits of the growing influence of Assessment for Learning strategies such as those supported by the evidence of Black and Wiliam<sup>1</sup>. These appeared to be encouraging teachers to move away from merely ensuring that learners master certain skills or knowledge, to supporting an explicit recognition of 'how to get there' and developing learners' understanding of 'what needs doing' to get there.
145. This in turn has encouraged teachers in successful schools to consider how to involve learners in both understanding learning intentions, goals and objectives and how to achieve them. Thinking and talking about their learning, taking ownership of it and drawing on self and peer reflections, as well as teachers' perspectives to suggest ways to improve, have become important facets of assessment (probe 1, assessment and curriculum development). There was evidence from the schools in this probe that learners developed their confidence and increased ownership of their learning, while their teachers allowed them to progress without restricting them to preparing for their national tests.
146. The learner surveys provided evidence too of the benefits of peer and self-assessment in straightforward achievement terms. In 2009, secondary learners with lower self-reported attainment levels saw themselves as less involved in marking their own and/or other learners' work than learners with higher self-reported levels. On the other hand, the focus groups revealed that learners did not always understand the purpose of peer and self-assessment. While some learners felt that it was good to mark their own work as "they can see the mistakes quicker and it helps them to learn from them for next time", other learners think that the only reason they mark other learners' work is "so that we don't cheat", although some learners recognised "that when people cheat they are only cheating themselves".

### The extent learners are engaged in assessment

147. Secondary learners appear to be getting increasing opportunities to take part in peer and self-assessment. In 2008, two-thirds of secondary learners said they had the opportunity to mark their own or other's work, but two years later the proportion had risen to nearly three-quarters. It is harder to interpret the equivalent data for primary learners as the form of the question changed in 2010 (when a larger sample with a wider age range was surveyed). In 2008 and 2009, the proportion of primary learners reporting substantial involvement in 'marking' their own or other's work was around three-quarters (it rose very slightly in the second year). When asked, in 2010, how often this happened, 63% said often (i.e. every day or several times a week).
148. Learner engagement in assessment also featured in many of the successful schools across all seven probes, irrespective of the focus of the probe itself. For example researchers encountered examples of peer assessment, of both knowledge and skills, in all four of the schools in Probe 5 (wellbeing and achievement).
149. Active learner engagement in assessment of the kind highlighted in our research de facto involves learners in thinking about how they learn. The proportion of primary learners who said that their teachers helped them to think about the way they learned rose between 2009 and 2010 from 63% to 84%. Responses from secondary learners showed a similar pattern (from 51% to 68%) as did the proportion who said that their teachers were good at helping them to understand what "I need to know and what I need to be able to do next" (70% to 82%).

## How learners are engaged in assessment

150. The school-based research indicated that ‘teaching to the test’ has been, or is increasingly being, superseded in schools that are successful in curriculum innovation by assessment strategies based on developing skills and understanding through involving learners actively in the assessment process. Key features common to all the schools visited in probe 1 were identified through analysis of observed classroom practice and from the propositions that the teachers developed about linking curriculum innovation and assessment. Each school had a guiding philosophy and vision that recognised the centrality of learners in learning and assessment processes and used the learning environment as part of the assessment infrastructure. But schools involved their learners in different ways, depending on the context.

151. The learners who took part in the focus groups identified some of the ways they were involved in peer and self-assessment, for which they usually had opportunities in English, mathematics, science and modern foreign languages:

*“We have to check for spellings and do ‘two stars and a wish’” (find two things which are good about what they have done and one thing that they could improve on – primary learner).*

*“In numeracy, we have booklets which we mark using faces with sad, straight and smiley expressions; if we need more help on something, we use a sad face, but if we understand something well then we use a smiley face” (primary learner).*

*“We swap workbooks in English and mark each other’s work according to the guidelines” (secondary learner).*

152. Probe 1 (assessment and curriculum development) showed further ways that teachers engaged learners in assessment to make it more effective and personalise teaching and learning. They included:

- individualising learning objectives by negotiating success criteria;
- structuring group and paired working to support assessment;
- linking self, peer and teacher assessment in and across lessons;
- assessing and supporting learning using walls and whiteboards; and
- structuring critical reflection.

153. We have offered an example of each of these below. For a richer picture from the school-based research, see probe 1.

### Individualising learning objectives by negotiating success criteria

154. After giving the learning objective for the lesson, the teacher negotiated the success criteria for the lesson with the learners in order to increase their motivation and engagement in their learning. The children were encouraged to discuss and define success criteria for problem-solving in pairs and then offer suggestions to the teacher. The children continued to work together in these groups to resolve the mathematical problems they had been set.

### Structuring group and paired working to support assessment

155. At the beginning of one lesson children used individual wipeable whiteboards in a mathematical agility starter assessment. After this they worked in groups of four, both as whole groups and with shoulder and face partners where children are seated strategically, with higher and higher-middle achieving children and lower-middle and lower achieving children working as pairs. Working as ‘Numbered Heads’ together in teams of four allowed children to work independently and in pairs before coming together to share their

approaches to problem solve such questions as, 'How long does it take blood to travel around the body?'

### **Linking self, peer, and teacher assessment in and across lessons**

156. One teacher used a range of formative assessment strategies throughout her lessons. For example, she sometimes began with snap answers to a starter task written on the learners' individual whiteboards as a way of seeing their answers immediately. At other times she asked for a chorused response. She also made use of feedback from paired and small group discussions in which learners reflected on their learning together, peer questioning and presentations by learners to the class before the final self-assessment by children against their learning objectives. The children's self assessment used four colours to convey their perceived level of understanding – red for "wobbly understanding, I was unsure if I was doing it right. It was really hard", orange for "good understanding, a few mistakes but I know where I went wrong", green for "very good understanding, I am ready for the next step next time" and blue for "outstanding understanding – I need a new challenge".

### **Assessing and supporting learning using walls and whiteboards**

157. Weekly targets and the learning supports required for the ongoing work were placed on a 'working board' or 'learning wall' in some classrooms. The working board was usually changed weekly, depending on the topic. If it was mathematics and shapes, for example, the board would contain the shapes, parallel lines, and angles etc so that the learners could see it all the time. Such displays thus supported development of the key concepts that the teacher wished the learners to learn. Sometimes, the working board was used to communicate:

- learners' initial thoughts on a topic;
- learners' early ideas about what to do; and
- learners' propositions about the current topic

158. The working board (or learning wall) was therefore used to illustrate both class understandings and work in progress

### **Structuring critical reflection**

159. During a creativity lesson, one teacher introduced her learners to four sequential activities to develop both their and her awareness of their progress and development in understanding creativity and its role in learning. In the introductory activity children were asked to position themselves on a scale (represented by a rope suspended across the classroom). Further activities enabled them to share and agree on what they perceived as the main characteristics of creativity, using visual stimuli plus words and prompts and to use an enquiry-based approach (a 'Lost at Sea' exercise) to support the development of creative, critical and evaluative thinking. The teacher also used a questionnaire at the end to check that her class had improved their understanding and awareness of ways in which they could be creative to improve their learning. During the lesson 'Top Thinking' certificates were awarded to show that capabilities such as thinking, speaking, listening, and questioning were valuable learning skills. to present these certificates peers had to explain why the recipients deserved them.

### **Key messages for this theme**

160. Findings from the international evidence base (across a number of curriculum areas) suggest that external pressures to use national test results to inform others of school and individual achievement may put pressure on teachers to 'teach to the test'.

161. Evidence from the (later) English surveys suggests strongly that learners in secondary schools perceived themselves as increasingly actively involved in their assessment. Similarly,

in both primary and secondary schools learners increasingly believed that they were helped by their teachers to think about how they learned and to plan for the next steps in their learning.

162. Our in depth school-based research suggests that active engagement of learners in their own assessment in successful schools may be effectively counteracting the risks of limiting learning through teaching to test identified in the earlier research. Learner responses to the surveys suggest that amongst the wider school population this practice may be more prevalent in secondary than in primary schools.
163. There is strong evidence from the international and school-based research that assessment can raise achievement when assessment processes involve:
  - learners thinking and talking about their learning; and
  - drawing on self and peer reflections, as well as teachers' perspectives.
164. We know from research<sup>li</sup> that AfL has tended to be implemented more in the letter than the spirit. Given the demonstrable benefits for learning of such approaches when they are embedded in school vision and practice, HEIs, school leaders and agencies with responsibility for ITE and for professional development may want to ensure that teachers and prospective teachers are made aware of the underpinning principles and benefits of such approaches.
165. To summarise: the key message for curriculum design and enactment in schools is that curriculum experiences that engage learners actively in drawing on self and peer reflections on their work, as well as on teachers' feedback, and in thinking and talking explicitly about their learning can help teachers resist what they see as pressures to teach to the test and also help raise achievement.

## Theme 6. Planning appropriate curriculum tasks, planning for challenge

166. Challenge arose first as an important theme for the project from student surveys and from policy priorities. It was later identified from the review of the international evidence about challenge and from a series of teacher focus groups exploring the obstacles they experience in creating an appropriate level of challenge in curriculum experiences and strategies for overcoming them.
167. The Challenge review studies helped us to explore the way teachers construct challenge in the curriculum and linked evidence about benefits for learners. It found that the principles of constructing challenge were similar for all learners whatever their level of achievement. A significant number of studies in the review focused on challenging particular groups of learners such as Gifted and Talented, low achievers, disengaged learners or those at risk of disengagement and/or young people from black and minority ethnic (BME) backgrounds or for whom English is an additional language (EAL). Yet the principles of constructing challenge were found to be similar for all learners, whatever their background or prior attainment. They included constructing challenge through differentiated curriculum tasks, materials and resources together with the use of processes that embed challenge such as collaborative enquiry.
168. The definition of challenge used both in the Challenge review and with the subsequent focus groups of practitioners was:

*Challenging young people in curriculum terms means designing teaching and learning to elicit from learners their best efforts (i.e. challenge needs to be motivating) and to enable them to think and act in ways that are transferable and/or discipline-specific and which are progressively more complex, critical, creative and independent.*

### The benefits of planning challenge into the curriculum

169. By introducing challenge into curriculum experiences, there was a range of evidence (which is highlighted below) from the studies in the challenge review that teachers were successful in bringing about cognitive and/or performance gains for their learners. They also helped to improve their learners' motivation and engagement in learning.
170. Examples of these benefits for the range of diverse groups of learners indicated above are set out below:
- One study targeted those learners who were at risk of being expelled, dropping out of school or were so far behind they did not believe they could catch up. Specifically, they were low-achieving in: reading, writing, mathematics and were deemed unable to apply skills in the outside world. Co-operative partnerships were formed to link learners with businesses and colleges using teaching strategies based on problem solving in real life contexts, thinking skills, co-operative learning groups and a range of multi-disciplinary approaches. Quantitative analysis via base-lining and tracking showed that targeted learners increased attainment scores significantly in one year<sup>lii</sup>.
  - A 'catching up' programme in reading and mathematics in high poverty schools in the US aimed to provide learners with accelerated learning opportunities, based not on special programmes for small numbers of learners, but on organisational and instructional restructuring of the entire school, to try and enable learners to close achievement gaps. Teachers received intensive and sustained professional development and implementation support. Literacy interventions were based on modelling and working in small, cooperative learning teams and in paired reading tasks. In mathematics, learners were challenged to think and make sense of what they were learning, including seeking

connections between mathematics and the real world. Learners in the experimental schools significantly outperformed learners in the control schools<sup>liii</sup>.

- A study which focused on disaffected learners involved changes to pedagogy in music teaching. The teacher created an authentic situation where learners, even with limited technical skills, were encouraged to think and act as professional musicians would think and act. The learners' enjoyment was fostered through effective rehearsal techniques and through a real time evaluation of the learners' attention, interpreting their expression and body posture. Using short term, real life goals in this way and promoting collaboration and peer-learning resulted in improvements in learners' motivation which ultimately generated a school music culture<sup>liv</sup>.
- A programme to meet the needs of academically low-achieving, 11-14 learners in mathematics in the US used real-world application tasks as a routine part of the curriculum, to act as a springboard for challenge. For example they encouraged learners throughout the programme to explain their thinking verbally or in writing. The program used baking brownies as the context for helping learners understand multiplication of fractions. Practitioners aimed to promote deeper mathematical thinking by having learners work on challenging problems for a significant portion of their lesson. These investigations usually entailed paired or small-group work and subsequent whole class discussions. Each investigation included follow-up problems, known as applications, connections, and extensions, or ACE. The program also stresses the importance of visual models and hands-on activities as aides to conceptual understanding. Learners in the intervention group achieved higher outcomes and had more positive attitudes towards mathematics than learners in the comparison group<sup>lv</sup>.
- An Australian programme aimed at integrating language and content teaching for culturally and linguistically diverse learners in English literature used strategies that combined high challenge with high support. The intervention programme was designed for Year 7 learners (boys) in an Australian public school. The principal aim of the research project was to address the nature of curriculum challenge and of pedagogical practices that were effective in addressing the specific needs of EAL learners. The research focused in particular, on the ways in which the teacher, in a unit of work on Romeo and Juliet, drew on socially oriented theories both of learning and of language to articulate the nature of the challenge that learners faced in their engagement with academic language in the mainstream curriculum<sup>lvi</sup>. The study describes the ways in which the teacher wove both content and language teaching in her lessons. End of year assessments indicated that relative to their English-speaking peers the majority of learners had made substantial academic gains. The researchers concluded that the teacher's approach to EAL learning in a mainstream content classroom provided a constructive and positive alternative to the more common response of modifying the curriculum for EAL learners<sup>lvii</sup>.
- A project aimed at mathematically gifted learners in England was based on a review of research, which found that acknowledging learners with mathematical gifts and talents is crucial and that it is important that they are challenged with appropriate stimulation, guidance and teaching. It also emphasized the importance of constructivist theories of learning. Drawing upon Vygotsky's Zone of Proximal Development theory, learners work with the help of a skilled other on tasks that are beyond their grasp when working alone. The sample of promising learners comprised year 5 children, aged 10- 11 within inner city schools in eleven Local Authorities within the Inner London area. Teachers either used teaching materials and tasks from the higher levels of the National Numeracy Strategy or prepared additional work based on the same content for learners who 'finished' their work before their peers. Learners were more motivated by the open-ended investigational tasks (a form of enrichment) than by exercises and tasks selected

from text books for older age groups (acceleration). They tended to seek the knowledge and skills required for these tasks from higher levels on the mathematics curriculum without being prompted to do so. Analysis of their work also showed an ongoing improvement in the quality of their responses, more systematic work, use of tables and extending their thinking by posing their own questions<sup>lviii</sup>.

### **The extent to which challenge is experienced on the ground**

171. In 2008 and 2009, most primary learners said that lessons were not too hard for them (the majority saying that they were neither too hard nor too easy). In 2010, a majority (53%) of respondents said that lessons were not too hard, an increase of 22% compared to 2008. They were not asked directly if lessons were too easy but it is a reasonable inference that this is what 20% of learners meant when they strongly disagreed that lessons were too hard. Lower achieving learners (i.e. those with self-reported national curriculum assessment grades of level 2) were more likely to find lessons too difficult than learners self-reporting higher levels. The secondary survey told a similar story with 58% of learners (up from 30% in previous years) saying that lessons were not too hard. About 16% in 2010 strongly rejected this suggesting that at least this proportion were finding lessons too easy.
172. Although 53% of primary learners appeared not to find lessons too difficult in 2010, this didn't automatically translate into unchallenging.
173. Around 16% of learners said in 2010 that they only occasionally found lessons interesting and challenging. And the proportion of learners who felt that lessons were more frequently interesting and challenging (asked in 2009 and 2010 only), rose from 69% to 83%, an increase of 14%. But amongst secondary learners a reducing number over the three years reported that lessons were too difficult for them. In 2008 only 31% said that lessons were not too difficult for them. By 2010 this had risen to 58%. The proportion of secondary learners who felt that lessons were only occasionally interesting and challenging was greater than primary – 25% – similar to 27% the year before.
174. Challenge, as we see from other evidence in this section is a complex construct. For example, some learners enjoy it while others find it stressful. And these patterns in learners' experiences of challenge on the ground reflect that complexity. Nonetheless, coupled with focus group discussions which elaborated learners' and teachers' views about challenge, they seem to us to support the inference that a small but significant proportion of learners are not being challenged sufficiently and that, in the primary phase particularly, this is more true of higher achieving learners.

### **Ways of planning for challenge**

175. Many of the strategies employed by teachers in the Challenge Review were consistent with those we have identified from the earlier curriculum reviews and from the school-based curriculum research. They included:
  - collaborative inquiry and problem solving – developing thinking skills – with guided interaction between learners (i.e. structured group work);
  - constructing challenge often required teachers to shift to a more facilitative role, encouraging learners to take increasing responsibility for their learning; and
  - diagnostic tasks meant establishing learners' starting points and monitoring their individual progress in learning so that teachers could construct appropriately challenging and personalised curriculum experiences.
176. These strategies mean that teachers make many difficult judgements when constructing curriculum challenge. They include:

- diagnosing learners' starting points in terms of existing knowledge and skills in order to plan for building on these (see theme 4);
- creating a balance between support and challenge and stretch; and
- judging when to step back to allow for independent learning.

### **Creating a balance between support and challenge**

177. Evidence from the Challenge review showed that when teachers challenged learners, they found the learners often did not want to do things they knew they couldn't do or couldn't do well. But the review also highlighted how learners need to experience periodic challenge and even occasional failure in order to develop higher levels of self-efficacy (capacity to reach their goals) and task persistence. The Challenge focus group participants elaborated further on the likely impact on learners of tasks they found too hard. These included loss of confidence, self-esteem, interest and enjoyment, breakdown of trust in the teacher and becoming demoralised, disengaged and disaffected. Disruptive behaviour was thought by them to be one of the clearest indicators of learners finding work "too hard".
178. The Challenge review noted a number of ways of supporting learners to complete highly challenging tasks and activities. These included: mixing easy tasks with more challenging tasks, giving learners opportunities to select the tasks they tackled so that they varied the level of challenge themselves, increased scaffolding and peer support. The challenge focus group participants also suggested stepping the challenge by, for example, starting learners off on an easier task that they can succeed at before offering a higher challenge as well as providing more scaffolding. But some focus group participants (the primary English specialists) stressed the importance of establishing a 'safe to fail' ethos while others (the secondary mathematics and science teachers) stressed the importance of building up faith and trust in the teacher by being clear about the challenging nature of what they were requiring from learners<sup>lix</sup>, particularly for learners in lower attaining groups.

### **Facilitating independent learning**

179. The Challenge focus group participants commented on how hard stepping back in order to enable independent learning can be in practice. They observed that teachers have a tendency to take more control as learners get older rather than less. The main reason the focus group participants found stepping back hard to do in practice was that they simply found it hard to let go – they couldn't resist directive support. A number also felt that time (by which they often meant curriculum constraints) was an issue – rather than taking time to develop independent learning they stepped in to try to help learners progress more quickly. The science specialists seemed particularly concerned about misconceptions developing if they let learners try to work things out for themselves. Some of the teachers suggested that didactic teaching was easier than adopting a facilitative approach because they felt more in control. A few felt that their learners, particularly boys, were not able to work independently enough, for example to describe their thinking or planning for them to let go.
180. For those teachers who did feel able to step back, the key seemed to lie in training the learners to become more independent. They helped to make learners more independent by conveying expectations that learners would have time and space to figure things out for themselves. They made tasks 'safe enough to let go' by putting strategies in place to scaffold or structure the learning.
181. An example (described in the school-based study, 'Getting learners to take greater responsibility for their own learning during collaborative group tasks') was the idea of planning 'Challenges' whereby groups of learners are presented with problems, investigations or mini-projects covering a wide range of subject areas. The Challenges included creating a playscript to be performed to another class with an accompanying



poster to advertise their play or designing a selection of party bags of different prices and which contained different gifts. As the Challenges were open tasks, the learners needed some support in order to ensure they became meaningful learning experiences. So planning not only involved the activity itself, but also how the learners would work with each other (through being given specific roles such as time keeper, materials manager and quality checker etc.), to talk about the activity and the resources that would help.

182. The teachers who set up the challenges described above noticed big differences in the learners' ability to plan the challenges and take on the different roles within the groups so they provided some scaffolding around the tasks, which they slowly removed as their learners successfully developed their skills and understanding. The first level of scaffolding in the Challenges activity involved the teachers modelling the different group roles such as quality checker and team representative to show the learners specific observable behaviours. Then, once the learners really understood the various roles and had developed their skills in them, the teachers moved on to 'planning' in order to support their learners' skill development in this area too.
183. For more examples of how teachers implemented challenge strategies in their classrooms see Challenge review.

### **Key messages for this theme**

184. The 2009 systematic review of curriculum challenge came about as a result of an initial indication in the first learner survey data that a significant proportion of learners (25%) felt themselves to be under challenged in their school work. Subsequent survey results pointed to a persistent significant minority of students reporting a lack of challenge. Findings from the challenge review and focus groups helped to identify a number of underpinning operational difficulties for teachers and reasons for this problem. They also have an important role to play in building the evidence base about the curriculum in England because they highlight the points of intersection between the international evidence base and the later school-based research. The latter are derived in particular from evidence of positive impacts on learning of particular curriculum processes. These processes reinforce the international and school based research. They were:
- collaborative inquiry and problem solving – developing thinking skills – with guided interaction between learners (i.e. structured group work);
  - constructing challenge by teachers developing a more facilitative and probing role that encourages learners to take increasing responsibility for their learning; and
  - diagnostic tasks to establish learners' starting points and monitor their individual progress in learning so that teachers can construct appropriately tailored, challenging curriculum experiences.
185. Constructing appropriate levels of challenge in the curriculum is thus a demanding aspect of curriculum development which involves making connections between a range of already complex tasks. As the focus group outcomes show, teachers need support in managing this complexity. The evidence highlights the importance of personalisation, particularly in diagnosing starting points and understanding progress. In terms of planning curriculum progression, it might now be a useful step to begin to identify and to illustrate the interactions between curriculum design, planning for challenge and assessment. The research tells us these are all important ingredients of progression planning.
186. To summarise: the key message for school practice is that teachers experience a number of practical difficulties in managing the demands of creating progressively challenging curriculum experiences, and a number of teaching learning strategies were helpful in tackling these difficulties, including:

- building on learners' starting points;
- using strategies such as collaborative problem solving;
- context-based learning; and
- encouraging learners to take responsibility for their learning by planning in advance activities that would reveal the point at which it is possible to step back.

## Theme 7. Professional development in subject and pedagogic content and the management of curriculum change

187. Evidence about continuing professional development (CPD) and curriculum innovation emerged iteratively across the three datasets over the three years of the project. The importance of CPD in securing the excellence in subject knowledge required for the range of professional approaches to planning and enacting the curriculum highlighted in this research, was first flagged in findings from the initial map of systematic reviews of research which link interventions to benefits for young people. The studies in a follow up review showed that teachers needed to draw on both their subject knowledge and their experience and knowledge of learning in order to make their planning and delivery of the curriculum more effective. The evidence about staff capacity for curriculum innovation was further elaborated through a staff survey carried out in 2008-9 which highlighted important differences between teachers' and school leaders' perceptions about the scale and penetration of curriculum reforms at a given point in time. We explored these differences further through a multi site probe into the management and support of curriculum change in schools that are effective in curriculum reform. The cumulative evidence highlights the dynamic relationship between curriculum development and CPD by identifying the important contribution that CPD makes to curriculum development and that curriculum planning served as an effective vehicle and driver for CPD.

### Benefits – The impact of CPD on teachers and learners

188. The second systematic review of research provided practical detail to contextualise the benefits of curriculum-related CPD. It noted the effects of CPD programmes which developed teachers' knowledge and understanding of teaching and learning strategies that are important in securing effective curriculum experiences plus their knowledge of the content of the curriculum. For example:

- the different kinds of talk that children use and how to develop more productive forms of talk; and
- children's thinking in mathematics.

189. In the first programme highlighted here<sup>ix</sup>, the CPD took teachers through the professional learning they needed to enable them to guide their learners through a series of lessons that built up their skills in using dialogue effectively for learning. Teachers were able to focus the class on the quality of their talk and could intervene to support groups during discussion.

190. In the second programme<sup>xi</sup>, mathematics specialists supported teachers in exploring and refining their beliefs and attitudes in ways that enabled them to place their learners' thinking at the centre of the curriculum experiences they designed and facilitated. Teachers also found out how their learners were thinking by questioning them, reading what they had written and listening to their explanations. They then used what they learned to decide on the learners' next steps in making progress through the curriculum offer. The teachers made children's thinking central to how they taught:

*They came to believe that their role was not to tell children how to think, but to provide an environment in which children's knowledge could develop as the children engaged in problem solving experiences and reported on solution strategies.*

191. In one example from the study, ten year old children were expected to solve problems such as  $24 + 46$  in any way they could and to understand how they solved the problem so they could tell their teacher and other learners about it.

192. In both these examples the learners made gains in their learning when compared with control groups that did not take part in the programmes and the teachers reported a wide range of related enhancements in their knowledge, understanding and practice.

### The characteristics of effective CPD

193. There are a number of key factors that can be highlighted from the public knowledge base about CPD with positive impacts on learners<sup>lxii</sup> The latter range from significant improvements in attainment and achievement through to enhanced attitudes to different subjects and to learning through to increasing self regulation amongst learners. The benefits for teachers include:

- confidence in deploying a wider range of strategies and matching these to the needs of their learners and the demands of the curriculum;
- a commitment to continuing to learn and to designing new curriculum materials; and
- increased confidence in the capacity of the profession to make a difference to the learning of young people.

194. These findings are now firmly embedded in CPD policies in England. They are reflected, for example, in the Training and Development Agency's code of practice for CPD and in programmes funded by them – including the database of CPD provision and the post graduate, personal, professional development programme (PPD). The factors linked with these benefits include:

- **peer support** (in pairs or small groups) to encourage, extend and structure professional learning, dialogue and experimentation – in combination with;
- **specialist support**, including modelling, workshops, observation, feedback, coaching, introducing a menu of research-based strategies for enhancing learning;
- planned meetings for **structured discussion** – including exploring evidence from the teachers' classrooms about their experiments with new approaches and of their beliefs about teaching, the subjects being explored and their learners;
- **processes for sustaining the CPD** over time to enable teachers to embed the practices in their own classroom settings – including informal day-to-day discussions and observations between teachers, and using work they would have to do anyway (such as lesson planning and designing schemes of work or curriculum development) in workshops;
- recognition and analysis of teachers' individual starting points and building on what they know and can do already;
- **developing teachers' ownership** of their learning, by offering them scope to identify or refine their own learning focus (within a menu set by the programme or the school), and to take on a degree of leadership in their CPD; and
- **a focus on learning and learner outcomes**, often explicitly as a way to analyse starting points, structure development discussions and evaluate progress, both formatively and summatively.

### To what extent is this happening on the ground?

195. In the first year of this research we explored in some depth how a sample of three schools that were effectively innovating in the curriculum go about managing CPD and to what effect. The evidence from these in-depth multi-method research probes is summarised below in the section describing the different approaches to CPD that we encountered.
196. The focus of our larger scale national and international research has been on the enactment of the curriculum for and with learners rather than an evaluation of different system level interventions. The latter include the various national CPD programmes offered in support of

the new Secondary Curriculum by a range of national agencies including the National College for School Leadership, the National Strategies (Secondary) and the Specialist Schools and Academies Trust. Our surveys of young people's experiences of the curriculum, likewise, were not designed to generate direct evidence about CPD for teachers. So we have a less detailed picture to report in relation to the extent to which the practices highlighted in the international evidence base were prevalent in England during the period of our research. We do know and have already reported that young people's experience of group work and the extent to which teachers build upon what they know and can do already increased markedly over the life of the three year survey. This may reflect the substantial investment in CPD during this period.

197. But we do know from our secondary staff survey in 2008-9 that 78% of school leaders, 64% of middle leaders and 44% of classroom teachers believed that curriculum development and CPD were being planned together. The differences between these perceptions may relate to different ideas about the drivers for curriculum development. While 82% of senior leaders felt they had in place a whole school approach to curriculum development and change, only around 30% of middle leaders and classroom teachers agreed with this. Similarly, around 60% of senior leaders said they had developed their own curriculum model and 55% said individual departments took the lead. Only 21% of middle leaders said they had their own model. For classroom practitioners, this number was even lower at 15%. For practitioners (68%) and middle managers (55%), the predominant approach was departmentally based.
198. Given that the new secondary curriculum had only been implemented during that year, we were interested to explore how far this difference related to the time it takes for reforms to become embedded. We therefore also undertook, in 2010 (year 3 of the project), a multi site probe exploring a wider range of data about how both primary and secondary schools that have been successful in implementing significant curriculum innovation manage that change process. In the section that follows we highlight the key strategies being used by these schools to support CPD and the management of curriculum change. We summarise here the key contours of what we found:
- *Alignment:* When curriculum development is supported through CPD, aligned with it and delivered through collaborative development and design of curriculum materials and resources, teachers saw CPD as being about doing their job better. School leaders saw curriculum development as being about realising their School Development Plans. In making this explicit and being actively involved leaders modelled both the new approaches and the learning behaviours and outcomes they sought for young people and for their colleagues.
  - *Ownership building:* Explicitly aligning CPD and curriculum development with *informal* school accountability systems helped to build ownership and increased the transfer of new knowledge between subject approaches to the curriculum and aspects of learning. Maintaining a buffer zone between curriculum development, CPD and more formal accountability systems was also thought to be important. Early CPD inputs were geared to ensuring that all colleagues had a shared understanding of key ideas, concepts and plans.
  - *Key inputs:* CPD/curriculum development / accountability for curriculum development of this kind involved 'big picture' inputs from leaders and specialists. Hands on workshops were delivered through multiple CPD events and sustained via coaching by leaders and specialists and through observation to identify foci for coaching sessions and supportive challenge.
  - *Embedding curriculum development:* curriculum development became embedded at scale via tools and resources adapted by staff for their context after they had developed their understanding of key issues and underpinning principles. Informed adaptation for

context was part of CPD and included use of templates, planning grids and rubrics mediated through peer and specialist support. New curricula are resource hungry. Building capacity for this as part of teachers' professional role was crucial to sustainability.

- *Collaboration*: CPD and curriculum development leaders put a lot of thought into creating and populating teams with the right mix of skills, attitudes and status to take the initiative to scale. Collaboration was important in securing and mobilising multiple perspectives to open up a sense of new possibilities and increase the range and depth of curriculum experiences on offer.
- *Progression*: Securing progression within years was widely understood as an integral part of curriculum development. Securing progression between years at the same time as securing space for teachers to experiment and adapt curricula was challenging. Explicit strategies for securing this were in place in only one of our probe schools.

## **How CPD and the management of curriculum change was working on the ground**

199. The 2009 staff survey found some differences in the perceptions of different groups within schools about the management of CPD and its relationship to curriculum development. A substantial majority of senior leaders, for instance, thought that CPD and curriculum development were planned together (78%), that CPD and performance management were integrated (87%) and that curriculum development was an inter-departmental activity (72%). A majority (64%) of middle leaders shared their senior colleagues' view about the joint planning of CPD and curriculum development and significant numbers agreed about the link with performance management and CPD (74%) and the interdepartmental approach to curriculum development (52%). Classroom practitioners did not completely agree with this; just over half recognised the link between performance management and CPD but only 33% thought CPD and curriculum development were planned together.
200. Staff professional development was seen by all schools involved in the project as essential for curriculum development. CPD models and approaches adopted by schools were tailored to make curriculum innovations work in their particular contexts. Each school's approach to CPD and its links with curriculum development work are presented in detail in individual schools' case studies, within each probe report (1, 4, 6 and 7). Probes 3 and 7 (CPD and curriculum development and the management of change respectively) explore in depth the approaches to CPD which were consistent in the probe schools. They illustrate the connections between practice in schools that are effectively developing the curriculum and the factors identified in the research literature as being linked to benefits for learners.

### **Working collaboratively**

201. In all probe schools, teachers worked in small, formal groups to develop curricula and resources and to plan lessons and schemes of work in a variety of subject areas. Group size and make up was carefully considered to ensure a good mix of perspectives, seniority and skill. This helped ensure, for example, that sceptics had the opportunity to learn from and with enthusiasts and that enthusiasts were challenged to refine their thinking through the questions of sceptics. Groups were also used to ensure that important connections for deepening learning were made between subjects. In one of the schools, for example, a group of eight teachers drawn from different subjects in the humanities department worked successfully together, while a modern foreign languages project designed to build capacity in three clusters of five schools, (which needed quickly to introduce new approaches and to make the most of specialist expertise), involved 19 teachers meeting together to jointly develop ideas and resources. By bringing groups of teachers together, project leaders created professional learning communities in which teachers were mutually

responsible for each other's learning and for the resulting curriculum programmes and resources.

### **Coaching**

202. CPD and curriculum leaders found ways to complement group work with opportunities for teachers to take part in one to one specialist or co-coaching, or both. In the school where the eight teachers were working together to develop an integrated Year 7 humanities curriculum, the teachers also worked in pairs e.g. a history teacher paired with a geography teacher to support each other in teaching areas of the curriculum outside their specialism. Whilst the practical details of the approaches to coaching (number of sessions, elapsed time between sessions, pairing arrangements etc.) differed, the learning processes at the heart of the coaching remained consistent. All relied on a joint planning – observation – debriefing or feedback model. Experimentation with the new approaches was an important ingredient in this mix too. Teachers were expected to try out new lesson plans and resources on behalf of the group and to reflect on the outcomes for learners and for their practice. School and curriculum leaders were also actively involved in coaching. They used curriculum-oriented observation to help shape the focus for coaching sessions and to spot areas where old practices, which had been earmarked for replacement, were persisting as a result of a series of other pressures.

### **Internal and external expertise**

203. All probe schools mobilised both internal and external specialist curriculum expertise. External expertise included: creative arts practitioners, learner voice and CPD consultants, local authority advisers and the Royal Geographical Society. But it was the identification and deployment of internal specialist curriculum expertise that particularly characterised these schools. In one school, for example, subject specialists across the humanities faculty coached non-specialists in effective teaching and learning approaches. All the probe schools had an example of advanced skilled teachers (ASTs) and department heads offering specialist curriculum expertise.

### **Structures and sustainability**

204. To sustain the CPD projects, school leaders in the probe schools created regular opportunities for groups to come together. These varied from termly, discrete project meetings to more frequent meetings organised to fit with existing arrangements e.g. departmental meetings or programmed CPD sessions. Schools were also able to set aside time within school for teachers to meet in pairs or smaller groups for planning and coaching. In one school, there was a 'bid system' for professional learning time which the history teachers successfully applied for. ICT was used in two projects to provide a forum for discussion and in particular to facilitate resource sharing. Wider issues of sustainability were addressed through CPD and school development structures and processes. In all the schools, teachers and project leaders related their professional learning and practice development to performance management and wider school development goals. Another important strategy for securing sustainability included integrating the development of the curriculum and reviews of the effectiveness of new approaches through rapid review cycles.

### **Developing and using tools and resources**

205. Tools, rubrics and resources featured heavily as key mechanisms for sustaining curriculum development at scale across all our probes. Rubrics were attempts to capture and systematise ways of thinking. For example, 'split screen thinking and planning' was a way of reminding teachers in a school investing heavily in wellbeing to consider formal lesson objectives alongside thematic objectives flowing from the school's commitment to 'Building Learning Power' (BLP)<sup>lxiii</sup>. The school used the work of Guy Claxton as a springboard for local

development and adaptation. Similarly, 'Emotional Quotient' (EQ)<sup>7</sup> checklists, agreed with learners and staff, were on display throughout one school that was seeking to place the development of effective learning relationships at the heart of securing access to the curriculum for every learner.

206. Such tools and resources were used and adapted very deliberately in probe schools where the focus of enquiry was CPD or the management of curriculum change. They ranged from planning grids to enable monitoring across the curriculum or to embed cross-curricula themes or thinking within lessons or subjects. They included an audit tool for SEAL<sup>lxv</sup>, an enquiry toolkit, 'habits of mind' displays, the development of a resource bank of BLP starters<sup>lxvi</sup>, and the adaptation of school reports to include specific entries for new aspects of the curriculum, such as perseverance.

### **Key messages for this theme**

207. The international evidence base highlights the importance of effective CPD for all aspects of curriculum development. Benefits for learners include improvements in attainment and achievement and more positive attitudes towards the curriculum. The benefits for teachers include greater confidence in deploying a wider range of strategies and matching these to the needs of their learners and the demands of the curriculum. Teachers also displayed commitment to continuing to learn and to designing new curriculum materials.
208. CPD which promoted such learning benefits included peer and specialist support to encourage, extend and structure professional learning, dialogue and experimentation. These were combined with planned opportunities for collaboration and discussion, focussed on developing learner outcomes. They also involved processes for sustaining the CPD over time to enable teachers to embed the practices in their own classroom settings.
209. Evidence from the school-based research also illustrate the conditions in schools that enable effective, curriculum oriented CPD. Schools that are effective curriculum innovators supported curriculum development through CPD at every stage, aligning the two through collaborative development and design of curriculum materials and resources. The CPD process involved a combination of 'big picture' inputs from leaders and specialists, and hands on workshops delivered through multiple CPD events. These were sustained via coaching by leaders and specialists and collaborative ongoing development work by teachers. Monitoring through observation was used to identify foci for coaching sessions and supportive challenge.
210. In this context, teachers saw CPD as being about doing their job better. School leaders saw curriculum development as being about realising their school development plans. These clearly had an important and positive effect on ownership building. Effective leaders were actively involved; they modelled both the new approaches and the learning behaviours and outcomes they sought for young people and for their colleagues.
211. Curriculum development was embedded at scale through tools and resources adapted by teachers for their own contexts after they had developed their understanding of key issues and underpinning principles. Informed adaptation for context was part of CPD and included use of templates, planning grids and rubrics mediated through peer and specialist support. New curricula are resource hungry. Building capacity for resource development as part of teachers' professional role was crucial to sustainability.

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<sup>7</sup> Emotional quotient (EQ) as in intelligence quotient. Based most recently on publications by Daniel Goleman (1996), EQ is suggested as a way of measuring emotional intelligence.



212. Securing progression within years was widely understood as an integral part of curriculum development. But securing progression between years at the same time as securing space for teachers to experiment and adapt curricula was challenging. Explicit and systematic strategies for securing this were in place in only one of the schools involved in the school-based research.
213. The staff survey data about CPD from across the broader range of schools was rather less encouraging. This was not surprising as the examples and models evidenced through the school-based research came from a sample of schools which had been selected precisely because of their proven excellence in curriculum development.
214. A majority of the school leaders of the wider population of schools in the national survey believed that similar approaches to those described above were in place. But the perceptions of middle leaders and classroom teachers were of a patchier and less integrated approach both to curriculum development and to CPD.
215. To summarise: the key message for school practice is that structured CPD is an essential component of effective curriculum development, and that curriculum development is a strong driver for high quality CPD. Schools that manage to set up a virtuous circle between the two do so through careful alignment of CPD, curriculum development and informal accountability systems. Leadership of CPD is 'hands on', and involves modelling by school leaders plus very careful structuring of collaborative development groups and the tasks allocated to them.

## Conclusions and recommendations

216. On the basis of this accumulated evidence across the three year project we have set out below some of the conclusions and the potential policy and practice implications arising from the core findings. However, we strongly recommend that practitioners who are responsible for curriculum development on the ground also visit the practical reports of the school-based research and/or the examples from the research literature at: <http://www.curee-paccts.com/our-projects/qcda-building-evidence-base>.

### Group Work

217. There is extensive international evidence about the benefits, in relation to both achievement and engagement of structuring group work. The evidence embraces all aspects of the curriculum, from mathematics and science to social skills and citizenship. Carefully structured group work draws into curriculum experiences a wide range of learner perspectives and opportunities to apply and build on interpersonal skills. In doing so it helps develop metacognitive awareness.
218. Schools that are effective innovators in the curriculum found that structured group work had many benefits and played an important role in securing access to the curriculum.
219. *In the light of this evidence teachers and school leaders will find it helpful to consider both how to harness the power of collaboration and to prepare learners for it by:*
- providing clear guidance for group working;
  - designing tasks that are genuinely interdependent; and
  - creating activities that help learners develop the skills they need to work collaboratively in a productive way.
220. Survey data revealed a substantial increase in the numbers of learners who reported that they experienced learning through group work between 2007 and 2010. This increase took place during a period of intense policy change and implementation. This unusually rapid alignment between policy intentions and learner experiences took place in the context of multi-faceted support and development structures. *If support of this kind is not provided centrally, schools will need to consider how they can work together to replicate the multifaceted support that successful schools in this study put in place.*

### Context-based Learning

221. The international evidence strongly indicates that creating opportunities for learners to make connections between the school curriculum and the 'real world' outside of school enables effective learning to take place. Our school-based research illustrates that this has been happening in schools that are successful curriculum innovators. Such context-based learning has the capacity to enhance learners' subject knowledge and to help develop skills in reasoning and critical thinking. *Schools will find it helpful to consider the potential for context-based learning as a means of enhancing achievement within whatever model of the curriculum emerges from planned national and school level curriculum reviews.*
222. In considering the potential contribution of context based learning for curriculum development, school leaders and teachers will find it helpful to take account of the three strategies for creating context-based learning that were strongly evidenced in both the work of schools that are effective curriculum innovators and in the international research. These were:
- creating conditions in school for learners to draw on their experiences outside of school to support learning in lessons;

- parental engagement in learning set by the school, as in interactive homework tasks that generate discussion about learning and also shared learning between parents and carers and their children; and
  - community-based tasks.
223. The international evidence base shows that planning for curriculum experiences that connect learning in school, at home and in the community and which involve parents in their children's learning has a positive impact on achievement. Parents can be highly effective in enhancing their children's learning throughout their schooling, not only in the early and primary years. *As parental involvement offers strong benefits, it may be helpful to include in national and school level curriculum review work consideration of ways to raise its profile in curriculum planning.*

### **Engaging learners in assessment and diagnosis**

224. There is strong evidence from the international and school-based research that assessment can raise achievement when assessment processes involve:
- learners thinking and talking about their learning; and
  - drawing on self and peer reflections, as well as teachers' perspectives.
225. There are many examples of effective assessment for learning (AfL) strategies, including involving learners actively in peer and self assessment. *Teachers need to draw on both their subject knowledge and their experience and knowledge of their own and their learners' learning in order to make their planning and delivery of the curriculum more effective in this context.* But diagnosing what learners know and are already able to do can be difficult. One perceived difficulty expressed by teachers in mathematics, science and English was learners' lack of ability to talk about their learning. *This highlights the need to encourage the development of skills in articulating thinking and existing understanding from an early stage.*
226. Another key challenge to emerge was the practical difficulties in accessing detailed insights into every learner's individual starting points and beliefs when working with large classes. *CPD that helps practitioners access effective strategies and be aware of common patterns and misconceptions in particular subjects has an important role to play here. Ways of providing this could be usefully considered within and beyond individual schools. Between-school partnerships and partnerships with others such as Higher Education Institutes (HEI) in particular, are likely to be important in securing widespread access to the specialist skills in particular subjects and in effective CPD provision. The latter is needed to ensure such CPD feeds directly into benefits for pupils.*
227. It seemed from our school-based research that engaging learners actively in self and peer assessment, at least in successful schools, may be helpful in counterbalancing the limitations for learning that external test pressures can generate. *Learner responses to the surveys suggest that, despite significant increases in such practices there may be room for further expansion across all schools but particularly in primary schools.*
228. We know that a major challenge in AfL has been using the specific techniques not simply as an end in themselves but also to generate evidence about learner starting points that can be used to review and refine teaching plans. *HEIs, school leaders and agencies with responsibility for initial teacher education and for professional development may want to ensure that teachers and prospective teachers are made aware of the underpinning principles and benefits of surface level techniques. This enables them to make informed adaptations for particular learning contexts instead of simply revising strategies quickly on the basis of how to insert them efficiently into existing practice.*

### **Constructing Challenge in the Curriculum**

229. The international evidence base showed that constructing appropriate levels of challenge in the curriculum can increase motivation and engagement as well as raising achievement.
230. The evidence highlighted the importance of planning for facilitating independent learning (i.e. encouraging learners to think and act for themselves) as an important part of constructing suitably challenging curriculum experiences. Yet challenge focus group participants explained how hard they found it to resist providing directive support and stepping in to try to accelerate their learner's progress. *Teachers and school leaders may wish to consider the need to plan in advance tasks that will provide the information that teachers need in order to know when it is "safe enough to let go", and for the removal of strategies previously needed to scaffold or structure the learning.* Teachers need support in managing the demands of creating challenging curriculum experiences and planning curriculum progression. *It might now be a useful step to begin to identify and to illustrate the dynamic links between curriculum design, planning for challenge and assessment. Building on learners' existing starting points and using strategies such as collaborative problem solving and context-based learning are both evidence rich strategies likely to be helpful in this context.*

### **Flexibility in planning the curriculum**

231. Evidence from both the international and the school-based research revealed the importance of planning learning across the curriculum in order to promote depth in young people's conceptual development. *Teachers and school leaders may wish to make stronger connections across the curriculum through joint planning between subjects and through cross-curricular strategies or using a thematic approach. These were identified in the international evidence and in our effective schools as helpful in overcoming the difficulty learners sometimes have in connecting thinking and transferring learning between subjects.*

### **CPD**

232. The international evidence base indicates a strong relationship between CPD and effective curriculum development. Benefits for learners include improvements in attainment and achievement and more positive attitudes towards the curriculum. The benefits for teachers include greater confidence in curriculum development linked to the needs of their learners. *As CPD has such a powerful impact, national and school level curriculum reviews could usefully consider the extent to which curriculum oriented CPD is embedded in school practices.*
233. The key message from the international evidence base and from the school-based research is that structured CPD is an essential component of effective curriculum development and curriculum development is a strong driver for high quality CPD. *It would be advantageous to consider the alignment between curriculum development and CPD both at school and national levels. School leaders will also wish to consider how to help ensure that developing the curriculum, schemes of work and specific lessons become the central, evidence-based motor for professional practice; how to ensure that, far from a bureaucratic chore, collaborative planning becomes the means through which teachers collectively realise their aspirations for young people.*
234. Effective curriculum development and professional development both involve combining a number of complex factors and ingredients that attend to both immediate and specific goals and longer term progression. *Schools leaders should consider the selection and refinement of tools as an important ingredient in securing a strong infrastructure for curriculum and professional development.* Examples of tools that teachers and school leaders may wish to consider that featured in this research ranged from local adaptations

of holistic approaches such as Building Learning Power, through CPD programmes with linked resources, to much smaller, specific support mechanisms such as learning walls, thinking and talking frames and planning grids.

#### **An overview**

235. We believe that one of the most important overall messages from across the project over the three years is this: *Curriculum development that genuinely feeds through into positive outcomes for young people means combining:*

- a focus on both curriculum content and the processes through which it is enacted by teachers and learners ; with
- planning curriculum experiences and tasks that harness and reinforce genuine learning relationships as distinct from purely social peer to peer relationships or didactic teacher to learner relationships
- Systematic underpinning of development via approaches and frameworks that help teachers attend to both immediate goals and purposes and to developing a coherent and progressive curriculum experience.

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### Strand 2 – Probes

#### Probe 1

CUREE & University of Wolverhampton (2008) *QCA Probe 1: How are teachers who are developing the curriculum in order to close the achievement gap whilst maintaining standards balancing the opportunities and demands of different approaches to assessment?* Coventry: CUREE

#### Probe 2

CUREE & University of Wolverhampton (2008) *Building the Evidence Base Probe 2: How are teachers reviewing and revising the curriculum through structuring group work and dialogue effectively?* Coventry: CUREE

#### Probe 3

CUREE & University of Wolverhampton (2008) *What are the characteristics of effective continuing professional development (CPD) for teachers undertaking curriculum development? What are teachers involved in? Who supports them, how and with what results?* Coventry: CUREE

#### Probe 4

CUREE & University of Wolverhampton (2009) *How can curriculum innovation help increase participation and engagement?* Coventry: CUREE

#### Probe 5

CUREE & University of Wolverhampton (2009) *What are the practical curriculum connections being made between wellbeing and achievement? To what extent have curriculum innovations, e.g. local adaptations of Social and Emotional Aspects of Learning (SEAL) drawn a link between the wellbeing and achievement agendas?* Coventry: CUREE

#### Probe 6

CUREE & University of Wolverhampton (2010) *How do effective curriculum experiences contribute to narrowing achievement gaps for the most vulnerable children and young people?* Coventry: CUREE

#### Probe 7

CUREE & University of Wolverhampton (2010) *In schools that are successfully developing the curriculum, how are the changes required by curriculum innovation being managed by school leaders?* Coventry: CUREE

### **Strand 3 – Literature Review**

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