

SCHOOLS AND COMMUNITIES
RESEARCH REVIEW 4

Effective classroom strategies for closing the gap in educational achievement for children and young people living in poverty, including white working-class boys



Centre for Excellence and Outcomes in Children and Young People's Services

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Summary

This research review tells us what works in closing the gap in educational achievement for children and young people living in poverty, including white working-class boys. It is based on a rapid review of the research literature involving systematic searching of literature, and places a focus on the highest-quality evidence of 'what works'. It summarises the best available evidence that will help service providers to improve services and, ultimately, outcomes for children, young people and their families.

The Institute for Effective Education carried out this review on behalf of the Centre for Excellence and Outcomes in Children and Young People's Services (C4EO).

What are the key issues?

- One in four children in the UK grows up in poverty, and for these children the impact on their chances of education and life success is profound.
- The attainment gap between children from rich and poor backgrounds is detectable at an early age (22 months) and widens throughout the education system, for example children from the lowest-income homes are half as likely to get five good GCSEs (General Certificates in Secondary Education) and go on to higher education.
- White working-class pupils (particularly boys) are among the lowest performers in academic achievement.
- Nevertheless, the link between poverty and attainment is a multi-racial phenomenon, with socio-economic gaps much greater than ethnic group differences.

What evidence is available?

- There is an extensive amount of research in the UK analysing the link between poverty and attainment, and in relation to other factors (gender, ethnicity, schools etc). However, there is much less quantitative evidence available in terms of 'what works' for specific interventions and strategies.
- There is a much larger evidence base available internationally in this area.

What approach did we adopt?

- We adopted a mixed-methods research approach – a qualitative review of observational and correlational research conducted in the UK, supported by a quantitative review of trials of classroom interventions, drawn from international studies. The first provides a wider picture of current good practice in UK schools (although maybe not 'proven') and the second shows where there is a direct causal link between a specific approach and learning outcomes, although not necessarily drawn from UK schools.

What did we find out? Key messages

- Classroom strategies shown to be effective for one ethnic or socio-economic group tend also to be effective for others.

UK research on wider school strategies

- Emerging research in the UK suggests that schools are adopting a number of promising strategies to improve outcomes for children living in poverty. These include:
 - rigorous monitoring and use of data
 - raising pupil aspirations using engagement/aspiration programmes
 - engaging parents and raising parental aspirations
 - developing social and emotional competencies
 - supporting school transitions
 - providing strong and visionary leadership.

International trials-based evidence of effective classroom strategies

- International research evidence, based on experimental trials, identifies some common classroom strategies that work across different subjects and educational phases:
 - The quality of teaching makes the biggest difference to learning outcomes. Pedagogy matters.
 - Coaching teachers/teaching assistants in specific teaching strategies significantly raises outcomes for children living in poverty. Evidence-based approaches include cooperative learning (structured groupwork), frequent assessment and 'learning to learn' strategies.
 - Adopting new curricula does not, in general, produce large improvements in learning outcomes.
 - Classroom interventions that close attainment gaps often adopt proven classroom management strategies, for example a rapid pace of instruction, using all-pupil responses and developing a common language for discipline.
 - Traditional use of information and communication technology (ICT) (e.g. individualised, self-instructional programmes) has minimal impact on attainment for children living in poverty. Whole-class approaches, such as the use of interactive whiteboards and embedded multimedia, show greater promise.
 - Whole-school reform models, which address multiple elements of school provision, can produce substantial improvements in academic outcomes.
 - The most powerful improvements in achievement are produced through the use of well-specified, well-supported and well-implemented programmes, incorporating extensive professional development. The

- review identifies specific evidence-based programmes that UK schools can adopt.
- Findings from the best-evidence synthesis of strategies for struggling readers living in poverty – What works for struggling readers? – identify that:
 - Structured phonics-based approaches, in general, work better than non-phonics approaches.
 - One-to-one tutoring by qualified teachers is very effective for improving literacy outcomes, but this is an expensive strategy. Tutoring by teaching assistants and volunteers can produce positive outcomes if they are well trained and use structured phonics materials.
 - Intervening immediately is most effective for primary reading, where preventative whole-class strategies are adopted first, followed by tutoring for the small number of pupils who still need it.
 - Findings of the best-evidence synthesis of early years interventions – What works in early childhood programmes? – identify that:
 - Early childhood programmes with explicit emergent literacy instruction and clear teaching objectives, provide the greatest improvements in school readiness, when they are implemented in a developmentally appropriate way.

Who are the key stakeholders?

- children and young people living in poverty
- parents and carers of children and young people living in poverty
- head teachers, principals, staff and governors at schools and other educational organisations with a high proportion of pupils living in poverty
- local authorities
- national policy-makers.

Their contributions are valuable in the process of improvement

- **Children and young people** living in poverty respond to classroom interventions that improve instructional processes and teaching methods. Well-specified and well-supported programmes and practices provide the greatest learning outcomes, which motivate and engage all learners, not just those from poor backgrounds. Children from deprived areas respond positively to opportunities that raise their aspirations for learning and future success.
- **Parents and carers** should be actively engaged by schools to support their child's development and learning. Breaking cycles of low aspiration and disenfranchisement with education is an important step for narrowing attainment gaps.
- Strong and visionary leadership, provided by **head teachers and principals**, is often the driving force behind improving outcomes for children living in poverty.

Senior decision-makers play a key role in improving teaching strategies, by providing extensive professional development in evidence-based programmes and practices.

- As the direct contact point with pupils in schools, **education staff** are the key route to inspiring children from low-income families into learning. They need to develop their teaching methods to meet the needs of these young people in line with evidence-based strategies drawn from the profession and research.
- **Local authorities** need to work across the Early Years Foundation Stage sector, primary and secondary schools to support the adoption of evidence-based programmes and practices in schools. They should encourage changes in pedagogy through extensive, school-based professional development. They should plan targeted approaches to raise the aspirations of children from low-income families and engage parents in school life.
- In a climate of financial austerity it is crucial that schools target any new resources for poor children into interventions that are proven to raise outcomes. **National policy-makers** should support the use of evidence-based strategies and interventions, and build more widespread access to programmes of this kind.

The evidence base

We found an extensive amount of UK-based research analysing the link between poverty and attainment. Collectively, these studies create a reliable picture of the correlation between low attainment and socio-economic class, and also investigate the relationship with other factors, including gender, ethnicity, parental factors and school environments.

Although the relationship between poverty and attainment is well characterised, there is less understanding of ‘what works’ in terms of interventions and strategies for raising attainment for children from disadvantaged backgrounds, and very little that is specific to white working-class boys. Most of the UK evidence in this area is based on observational studies, case studies, surveys, policy evaluations and other non-experimental research. This qualitative evidence is supported to a lesser extent by correlational analysis of outcome data for specific strategies, interventions and policies.

We identified a much larger body of quantitative international evidence that met the inclusion criteria for the main body of this review. Hence, there are some limitations in extrapolating the findings of the evidence to a UK context at this stage.

Research review methods

Research literature was identified through systematic searches of relevant databases and websites, recommendations from our Theme Advisory Group, and considering studies cited in identified literature (‘reference harvesting’). The review team used a ‘best-evidence synthesis’ approach to reviewing the research, adapted from the strategies used in the Best Evidence Encyclopaedia (BEE – www.bestevidence.org.uk). The method, described by Slavin (2008), is similar to

meta-analysis. This means that there are well-specified procedures for searching the literature, for including relevant and methodologically acceptable studies, and for pooling or averaging findings across studies.

Next steps

Three other reviews in the Schools and Communities theme are available on the C4EO website. These focus on effective practice in: closing the gap for children with additional needs; educational transition; and strengthening family wellbeing and community cohesion through the role of schools and extended services.

Local decision-makers and commissioners may also find it helpful to read the [Schools and Communities directors' summary](#), which presents the key messages from the three reviews.

C4EO is using the main messages from all the Schools and Communities reviews to underpin its knowledge-sharing and capacity-building work with local area partnerships, and through them the full range of professions and agencies working with schools and supporting children, young people and families in the wider community.

1 Introduction

This review aims to draw out the key ‘what works’ messages for classroom practice on closing the achievement gap for children living in poverty. It addresses two questions that were set by the C4EO Theme Advisory Group, a group of experts in schools and communities policy, research and practice:

- What works best in closing the achievement gap for children and young people living in poverty, including white working-class boys?
- What are the implications for teachers, head teachers, school governors and local authority children’s services?

The C4EO research reviews are based on:

- the best available international evidence on ‘what works’ in improving services and outcomes for children and young people and
- the best quantitative data with which to establish baselines and assess progress in improving outcomes.

As the focus is on classroom strategies, we do not review strategies for school selection, school funding/resources (e.g. Pupil Premium), teacher recruitment (e.g. Teach First) or school structures (e.g. academies).

C4EO will use the reviews to underpin the support it provides to local areas to help them improve service delivery, and ultimately outcomes for children and young people.

Definition of key terms

Child poverty

The main measure of child poverty used by the government is the number of children living in households below 60 per cent of median, equivalised household income. This is known as the relative low-income measure, which looks at whether the poorest families are keeping pace with the growth of incomes in the economy as a whole. However, this is just one of four measures of child poverty in the Child Poverty Act 2010 (England and Wales. Statutes 2010). These are: relative poverty; absolute poverty; persistent poverty; and material deprivation.

For the purpose of this review we use eligibility for free school meals (FSM) as a proxy indicator for low income. Although this is a relatively blunt measure, it is the main source of data that schools hold on the income of a child’s home background.¹ For the best-evidence synthesis in this review, studies were included if at least 30 per cent of pupils qualified for FSM.

¹ For example, there can be considerable differences between the numbers of pupils eligible for FSM and the take-up of FSM.

Methods

This review used a systematic method of reviewing educational research adapted from the strategies used in the Best Evidence Encyclopaedia (BEE – www.bestevidence.org.uk). The method, described by Slavin (2008), is similar to meta-analysis. This means that there are well-specified procedures for searching the literature, for including relevant and methodologically adequate studies, and for pooling or averaging findings across studies. Study outcomes are summarised as effect sizes, calculated to indicate the impact of a programme or practice in standard units. The use of standard units means that scores can be compared across a number of different evaluations or programmes (see Lipsey and Wilson 2001).

The research included in this review was either identified in the scoping study *Narrowing the gap in educational achievement and improving emotional resilience for children and young people with additional needs* (Atkinson *et al* 2009), or cited within the research items identified in additional searches carried out specifically for this review.

See Appendix 1 for further details of the methodology.

Strengths and limitations of the review

Strengths of the review include:

- identifying the best available evidence from research and national datasets to inform specific questions
- focusing on experimental trials that provide the highest-quality evidence of ‘what works’
- comprehensive and documented searching for relevant information
- guidance from an advisory group on the issues of greatest importance in schools and communities research, policy and practice.

Limitations of the review include the following:

- As the focus of this review was on classroom strategies, we did not review strategies for school selection, school funding (e.g. Pupil Premium), teacher recruitment (e.g. Teach First) or school structures (e.g. academies).
- The main focus of the review was on quantitative, experimental-based research. Other research should also inform policy and practice.
- The review had to meet very tight deadlines, which limited the ability of the team to extend and develop the evidence base through reference harvesting and hand searching.
- The review was limited to English-speaking countries only.
- Many of the qualifying studies for the quantitative section of the review were based on international rather than UK evidence.

2 Policy context

Policy principles

The themes of this review are central to the current policy direction of the coalition government. In his initial address to civil servants, the Secretary of State for Education, Michael Gove, emphasised the need to ‘improve literacy, raise pupil attainment ... and close the widening gap between the richest and poorest in society’ (Gove 2010). Indeed, making opportunity more equal has been described as an ‘ethical imperative’ (Gove 2010).

To deliver this outcome, the government has placed a renewed focus on supporting teaching and learning, describing it as the ‘core purpose’ of the Department for Education. It has emphasised the need to provide professionals with the best available evidence on ‘what works’ in order to raise standards, particularly in an environment where practitioners have greater decision-making responsibility.

‘There can be no going back to the secret garden when public and professionals were in ignorance about where success had taken root and where investment had fallen on stony ground.

Indeed, I want to see more data generated by the profession to show what works, clearer information about teaching techniques that get results, more rigorous, scientifically-robust research about pedagogies which succeed and proper independent evaluations of interventions which have run their course. We need more evidence-based policy making, and for that to work we need more evidence.’ (Gove 2010)

In this context, this rapid review aims to provide an overview of the rigorous, scientifically robust evidence for classroom strategies that improve learning outcomes for children living in poverty.

Poverty and educational attainment: what are the concerns?

Currently, one in four children in the UK is growing up in poverty (DWP 2009). For these children, the impact of poverty on their chances of educational and life success is profound. Despite average overall improvements in test scores, large differences in educational achievement according to socio-economic status persist, with family income and status by far the most significant indicator of success in the school system (Mongon and Chapman 2008; Strand 2008).

Even by the age of three, there is a noticeable gap in cognitive performance between children in the poorest sections of the population compared to children from better-off backgrounds (Feinstein 2003; Goodman and Greg 2010). This ‘attainment gap’ widens as children pass through the education system, with pupils eligible for FSM (a proxy for low income) falling behind non-FSM pupils at each key stage. The most recent data on General Certificate in Secondary Education (GCSE) attainment,

based on results from 2009, shows that children from low-income backgrounds are half as likely to get five good grades at GCSE as their classmates.² As these children pass into adulthood, they are more likely to leave school at 16, more likely to become 'NEET' (not in education, employment or training) and less than half as likely to go on to higher education (The Sutton Trust 2008).

Although the link between social class and educational achievement is clear and longstanding, more recent studies have attempted to better understand the many factors associated with low achievement. These studies reveal that, although gender is an important factor, with girls performing better in reading and in overall school success than boys, the attainment gaps due to socio-economic factors are much larger (three to eight times) (Mongon and Chapman 2008; Strand 2008).

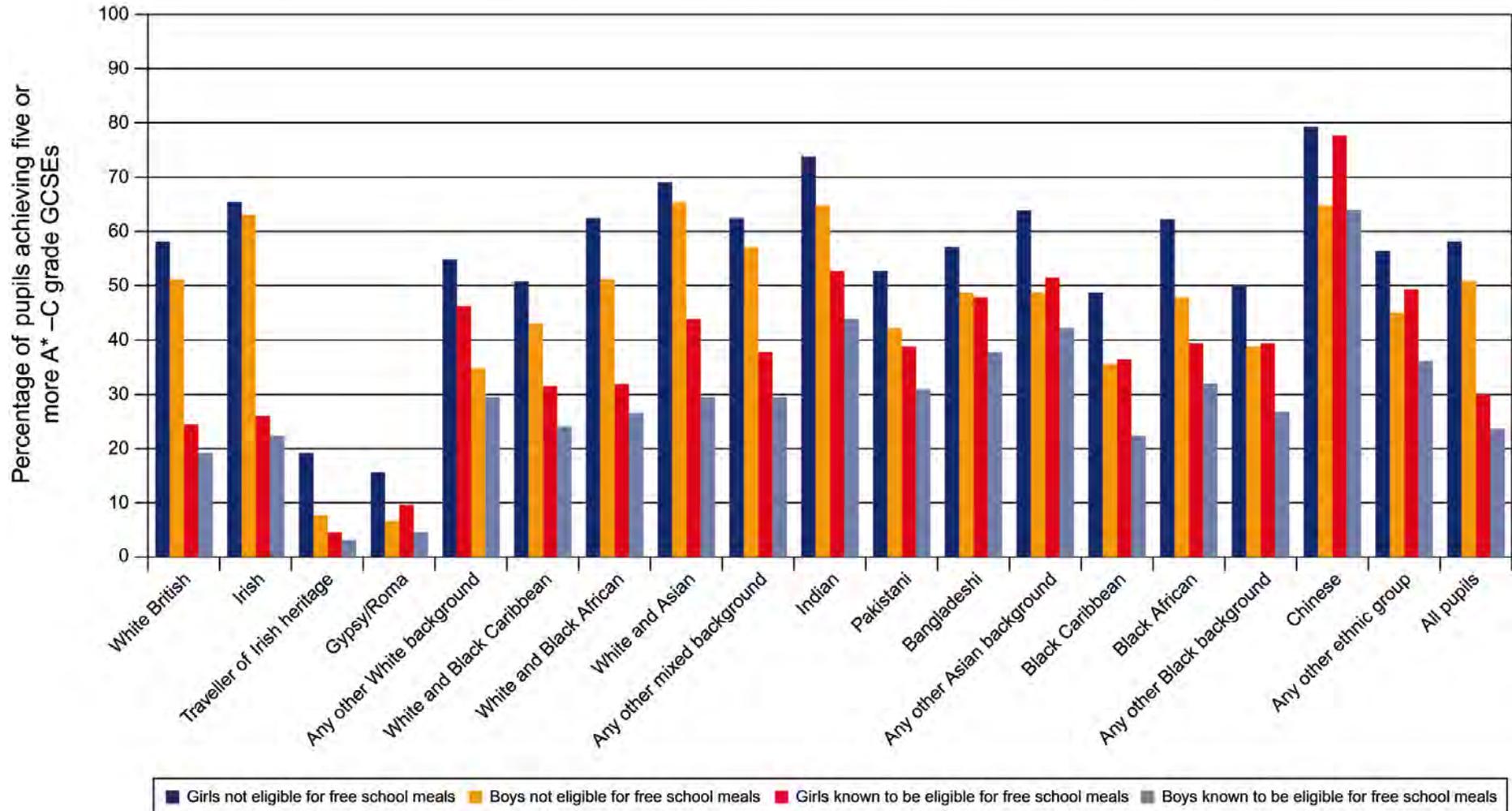
In particular, much attention has focused on the observation that, among children who qualify for FSM, white working-class boys are among the lowest in academic achievement. Indeed, white British pupils from low-income families consistently emerge as the lowest-achieving ethnic group whatever the socio-economic dimension (entitlement to FSM, parental occupation, neighbourhood deprivation, etc) (Cassen and Kingdon 2007; Strand 2008; Evans 2010). These findings have prompted a host of studies, recommendations and policy responses targeting this specific group, many of which are covered in this report (DfES 2005; Ofsted 2008; Hayes *et al* 2009; NUT 2009; Demie and Lewis 2010).

It is important, however, that these findings are not interpreted as indicating that it is only the attainment of white British pupils from low-income families that is of concern (Evans 2010). Clearly, the link between poverty and learning outcomes is a multi-racial phenomenon, with socio-economic attainment gaps much bigger than ethnic group differences (Strand 2008; NUT 2009). Thus, the substantial gaps in attainment due to poverty across all ethnic groups are a much wider cause for concern, and are therefore the primary focus of this review.

In completing this review we have found that, in almost all cases, successful strategies are not specific to one particular ethnic group, but are successful in tackling low achievement and closing attainment gaps for pupils from *all* disadvantaged backgrounds. Hence, although the issue can be defined in terms of specific ethnic groups, we chose to focus on 'what works' in raising attainment for all children in poverty. Where specific information is available for schools with a high proportion of white working-class pupils, this is highlighted.

² Twenty-seven per cent of children eligible for FSM achieved five A* to C grades (with mathematics and English) at GCSE, compared to 54 per cent of those not eligible.

Key Stage 4: Pupils achieving five or more A*–C grade GCSEs or equivalent by gender, free school meal eligibility and ethnic group, 2009



Source: Department for Children, Schools and Families (2009b)

Poverty and educational attainment: what is the response?

There has been much interest across the political divide over the last 10 years in tackling 'the opportunity gap' in education, with numerous policy initiatives. Government initiatives have ranged from targeted strategies for schools – for example, *Breaking the Link*, *City Challenge*, *Excellence in Cities*, *Extra Mile Project* – to community-wide approaches to tackling social mobility – for example, *New Deal for Communities*, *Skills for Life*, *New Opportunities*. However, despite this intense political focus, and a few notable successes,³ the average rate of improvement has been slow, with a reduction of less than 1 per cent in the achievement gap over the last three years in England (DCSF 2009a; Smith 2010).

The coalition government's approach to closing attainment gaps for children in poverty is not fully developed at this stage, but some initial speeches and announcements provide some indications of the policy direction (Gove 2010). Priorities are likely to include:

- providing funding to schools through the Pupil Premium to address the gap in outcomes for children living in poverty
- targeting resources where needs are most acute
- encouraging early intervention
- a shift in focus away from a wider connected-schools agenda to improve standards in teaching and learning
- an emphasis on using evidence-based interventions in schools.

In this climate of financial austerity, it is crucial that schools target any new resources for children from low-income backgrounds towards interventions that are proven to raise outcomes (Chowdry *et al* 2010). Thus, identifying, and encouraging the use of, evidence-based interventions and strategies in schools should be a priority.

³ Some London boroughs have succeeded in narrowing the gap at GCSE to five percentage points.

3 The evidence base

This section provides an overview of the extent, location, methodology and relative balance of the evidence located and used in this review.

The initial searching, recommendations and reference harvesting identified several thousand sources in total that were relevant to the research questions. This research was conducted and published by a broad range of sources, including universities, government departments, charities and non-governmental organisations.

We found an extensive amount of UK-based research analysing the link between poverty and attainment. This included a number of rich, large-scale analyses of data capturing trends in attainment of children growing up in the UK, such as quantitative analysis of the Longitudinal Study of Young People in England (Strand 2007; Strand 2008), the National Pupil Database (Cassen and Kingdon 2007), the Youth Cohort Study (Demie and Lewis 2010), the British Cohort Study (Goodman and Gregg 2010) and published government statistics (DCSF 2009b).

Collectively, these studies create a reliable picture of the correlation between low attainment and socio-economic class, and also investigate the relationship with other factors, including gender, ethnicity, parental factors and school environments.

Although the relationship between poverty and attainment is well characterised, there is less understanding of 'what works' in terms of interventions and strategies for raising attainment for children from disadvantaged backgrounds. Most of the evidence in this area is based on observational studies, case studies, surveys, policy evaluations and other non-experimental research. This qualitative evidence is supported to a lesser extent by correlational analysis of outcome data for specific strategies, interventions and policies. Although these studies are useful in building a picture of promising approaches for raising attainment for children in poverty, they do not allow for causal inferences (e.g. 'participation in a programme leads to positive outcomes on measures A, B and C').

4 Research context

This report summarises the findings of research on effective practices for primary and secondary school pupils from deprived areas. Ideally, we would have many rigorous experimental evaluations of replicable programmes and practices in the UK. In reality, however, such studies are rare.

In order to provide UK educators with useful information on research on approaches to improving outcomes for disadvantaged pupils, we have included two types of research in the following sections. One consists of a review of mostly correlational and descriptive research on general strategies used in the UK for improving the learning outcomes of pupils in deprived areas (see Section 5). The second presents the findings of systematic reviews of the rigorous experimental research on specific programmes and practices. The evidence base for the second analysis focused on schools in areas with a high proportion of children in poverty but much of the research took place outside of the UK (particularly in the United States [US]).

The rationale for including the two types of research is that each contributes in different ways to an understanding of how schools can improve outcomes in deprived areas. A summary of UK-specific research appears first, and is followed by a longer and more detailed review of international research on 'what works' for closing attainment gaps for children in poverty.

5 What works best in closing the achievement gap for children and young people living in poverty, including white working-class boys?

Key messages

Findings from the **synthesis of qualitative research**, conducted primarily in the UK (school case studies, observations, etc), indicate that schools are adopting a number of promising strategies to improve outcomes for children in poverty. These include:

- rigorous monitoring and use of data
- raising pupil aspirations using engagement/aspiration programmes
- engaging parents (particularly hard-to-reach parents) and raising parental aspirations
- developing social and emotional competencies
- supporting school transitions
- providing strong and visionary leadership.

Findings from the **best-evidence synthesis of international, experimental research** identify some common classroom strategies that work across different subjects and educational phases:

- Coaching teachers in new teaching strategies significantly raises outcomes for children living in poverty. Research-proven approaches include cooperative learning (structured groupwork), frequent assessment and meta-cognitive ('learning to learn') strategies.
- Adopting new curricula does not, in general, produce significant learning outcomes.
- Classroom interventions that close attainment gaps for children living in poverty adopt proven classroom management strategies (e.g. rapid pace of instruction, using all-pupil responses, developing a common language around discipline).
- Traditional use of ICT (e.g. individualised, self-instructional programmes) has minimal impact on attainment. Whole-class approaches, such as the use of interactive whiteboards and embedded multimedia, show greater promise.
- Comprehensive reform models, which address multiple elements of school provision, can produce substantial improvements in academic outcomes.
- The most powerful improvements in achievement are produced through the use of well-specified, well-supported and well-implemented programmes, incorporating extensive professional development. The review identifies specific evidence-based programmes that UK schools can adopt.

Findings of the **best-evidence synthesis of effective strategies for struggling readers** living in poverty indicate that the following work for struggling readers:

- Structured phonics-based approaches, in general, work better than non-phonics approaches.
- One-to-one structured phonics tutoring by qualified teachers is very effective for improving literacy outcomes, however it is generally expensive. Tutoring by teaching assistants and volunteers can produce positive outcomes if they are well trained, well supported and use structured phonics materials.
- Early intervention is most effective, where preventative whole-class strategies are adopted first, followed by tutoring for the small number of pupils who still need it.

Findings of the **best-evidence synthesis of early years interventions** shows that:

- Programmes with explicit literacy instruction and clear teaching objectives improve young children's school readiness when they are implemented in a developmentally appropriate way.

UK correlational and descriptive evidence of good practice for schools in high-poverty regions

We identified a number of studies that provided insights into promising strategies to close attainment gaps, which did not meet the inclusion criteria for this review. However, as these strategies appeared consistently across different studies, they are worth exploring in more detail.

Although the evidence is not conclusive at this stage, it certainly provides a broader picture of the approaches that schools are currently adopting (with some degree of success) to close the achievement gaps for children living in poverty. Over time, we hope that more thorough experimental evaluations of these interventions and strategies will prove that they can improve outcomes for poor children in the way that is indicated (Oxman *et al* 2010).

An overview of the broader approaches that schools are adopting is provided below, including a brief discussion of the evidence base supporting each strategy. A number of detailed reviews are available that discuss these interventions in more detail (Duckworth *et al* 2009; Demie and Lewis 2010).

Targeted support in numeracy and literacy – UK evidence

Children's grasp of language and literacy skills during early years and primary school is fundamental to accessing the curriculum and making good progress (Coghlan *et al* 2009). Poor literacy at primary school is strongly associated with later low achievement (Cassen and Kingdon 2007; Sodha and Margo 2010), and has been highlighted as a specific risk factor for those children from disadvantaged backgrounds (Cassen and Kingdon 2007; DCSF 2009a).

In response, specific initiatives have been proven to improve language and literacy outcomes for children from disadvantaged backgrounds. The conclusions of the 'Narrowing the Gap' study support these findings, which identified 'tailored one-to-one support' as an effective strategy for schools to close attainment gaps (NFER 2009).

The main body of our review focuses on research-proven interventions for improving literacy and numeracy for children in poverty. This area of research has an extensive evidence base, with clear implications for 'what works' in schools, including some excellent examples of research-proven programmes in the UK and internationally.

Recent policy recommendations support the use of such evidence-based strategies, and advocate more widespread access to programmes of this kind (GB. Parliament. HoC. STC 2010; Sodha and Margo 2010).

The importance of rigorous monitoring of progress and use of data

To make the most effective use of numeracy and literacy interventions, it is important to ensure that they are targeted at the children who need them most. To do so requires close monitoring of pupils' progress, particularly for underperforming pupils and those in vulnerable groups (e.g. pupils receiving FSM) (DCSF 2008).

Four of the studies we reviewed highlighted 'rigorous monitoring of data' as a characteristic of effective practice in schools with a high proportion of pupils receiving FSM, including white working-class boys (DCSF 2008; Demie and Lewis 2010; Mongon and Chapman 2008; Ofsted 2008;). In these schools, students' progress and teaching standards are regularly observed and analysed and the data shared with interested parties – parents, staff and governors.

Data is used in a number of ways: identifying underperforming groups; directing appropriate deployment of staff and resources; informing target setting; monitoring the impact of strategies and interventions; and challenging the aspirations and assumptions of pupils, parents and staff.

Well-developed pupil tracking systems are reported that capture a wider range of data in addition to attainment levels (e.g. attendance, eligibility for FSM, ethnicity, Special Educational Needs status). The research suggests that these schools are using external and self-evaluation to focus on gaps and progress, not just average attainment, and using this data to direct accurate and early intervention (DCSF 2008, 2009a).

As well as informing staff on pupil progress, attainment data is used to provide pupils with regular feedback on their progress (Kelly *et al* 2010). It is also used to promote self-evaluation, through approaches such as Assessment for Learning (AfL) and Assessing Pupil Progress (APP).

UK evidence on raising pupil aspirations using engagement/aspiration programmes

Young people's aspirations – which represent their future goals and the motivation to achieve them – play an important role in their attainment (Duckworth *et al* 2009). Across many of the studies we reviewed, a perceived lack of aspirations among pupils from low socio-economic backgrounds was identified as a key factor for underachievement.

Correlational evidence, from analysing large longitudinal datasets, shows a significant link between pupil aspirations – for example, expectations of school, belief in their ability, aspirations for higher education – and later attainment, even taking into account family background, parental aspirations and prior attainment (Goodman and Gregg 2010; Strand 2007;).

Unsurprisingly, raising young people's aspirations has been an increasing focus for schools (Demie and Lewis 2010; Mongon and Chapman 2008; Ofsted 2008;) as well as policy-makers (DCSF 2007, 2008; Sodha and Margo 2010). A large number of the studies we reviewed recommended the use of specific programmes that aim to raise the aspirations of children living in poverty (DCSF 2008; Emmerson *et al* 2006; Mongon and Chapman 2008; Ofsted 2008). This included studies that focused specifically on raising the attainment of white working-class boys (Demie and Lewis 2010; Mongon and Chapman 2008; Ofsted 2008). Nevertheless, further research is required to shed light on the specific contexts and processes required to close attainment gaps using such programmes.

The use of Gifted and Talented programmes is widely encouraged, particularly when schools ensure that their gifted and talented cohorts are representative of the whole school population, and effectively capture those children from low-income families who show promise (DCSF 2008; Duckworth *et al* 2009; Ofsted 2008).

For older children, initiatives such as AimHigher – a programme designed to widen participation in higher education by raising the aspirations of young people from under-represented groups – show promising signs of success. An evaluation of AimHigher found that participation in the programme was associated with improvements at GCSE level of 2.5 total points score (Emmerson *et al* 2006). However, causality is difficult to prove, as involvement in the programme is voluntary and may attract students who are more motivated than their peers.

A positive element of AimHigher is the use of adult learning mentors for young people in low-performing schools. This was suggested as a successful strategy for closing attainment gaps from case studies in the UK (DCSF 2008; Demie and Lewis 2010). A small-scale randomised controlled trial we reviewed from the US also showed a positive impact of mentoring programmes on attainment (Thompson and Kelly-Vance 2001).

Wider measures to encourage participation in further education, such as the Education Maintenance Allowance (EMA), also show promise. This financial

incentive provides support to young people from low-income families who stay in further education. A pilot evaluation of the EMA suggests such approaches have an impact on both participation in non-compulsory education (Middleton *et al* 2005) and A-level performance (Chowdry *et al* 2007), particularly for those young people from the most deprived backgrounds. It is worth noting that, as of November 2010, government funds for the EMA will be redirected towards more targeted support for young people for whom there are financial barriers to their participation in further education.

Alongside specific programmes, schools that are successfully closing attainment gaps are also broadening pupils' horizons by offering experiences and opportunities that they are unlikely to otherwise receive, for example, building links with local industry, and arranging visits to arts/drama groups and institutions of further/higher education.

UK evidence on engaging parents and raising parental aspirations

Across the studies we reviewed, parental involvement in school, and their aspirations for their children, emerged as some of the most important factors associated with lower educational achievement, even controlling for family background (Blanden 2006; Goodman and Gregg 2010; Sodha and Margo 2010; Strand 2007). This is particularly relevant to children from low-income families as parental aspirations and attitudes towards education vary significantly according to socio-economic status (Goodman and Gregg 2010; Sodha and Margo 2010).⁴ Ethnicity also plays a role here, with parental aspirations of white British children significantly lower than those in minority ethnic groups (Sodha and Margo 2010; Strand 2007).

Case studies and observations from schools with a high proportion of white working-class pupils support these findings, reporting that 'white working-class families are the hardest to engage within the life of the school and their child's learning' (Demie and Lewis 2010 p 44; DCSF 2008).

Breaking cycles of low aspiration and disenfranchisement with education is therefore seen as a key strategy for closing attainment gaps for these groups. This resonates with the findings of the 'Narrowing the Gap' study, which highlights 'working in real partnerships with parents and families and building on their strengths' as a key strategy (or 'Golden Thread') for closing attainment gaps (NFER 2009).

Promising school strategies to engage parents that we reviewed included: providing regular communication with parents (particularly targeting so-called 'hard-to-reach' families); use of 'parent forums' as a means of gaining parental feedback; and encouraging parents to join their children's learning through initiatives such as Family Reading Projects and booster classes (DCSF 2008, 2009a; Demie and Lewis 2010; Ofsted 2008).

⁴ For example, a recent analysis of the Avon Longitudinal Study of Parents and Children reported that 81 per cent of the wealthiest mothers hoped that their children would go to university, compared to only 37 per cent of the poorest mothers (Goodman and Gregg 2010).

Evidence suggests that these initiatives should be worthwhile, as a key characteristic of children from poor families that ‘buck the trend’ is extensive parental engagement from an early age (Blanden 2006). Nevertheless, although widely recommended, there is little robust ‘what works’ evidence available that shows a clear causal impact on attainment. Encouragingly, a recent randomised controlled trial of a family reading project, called SPOKES, showed significant promise for this intervention (Scott *et al* 2010) (see Box 1).

Box 1: Family reading projects – example of the *Supporting Parents on Kids Education in Schools (SPOKES)* home literacy programme

SPOKES is a 10-week course designed to help parents support the reading of six- to seven-year-olds at home. Based on two well-established reading programmes (*Pause, Prompt, Praise* and *Reading Recovery*), the initiative trains parents in developing skills of both decoding and meaning for beginning readers.

The programme is delivered through a combination of discussions, role-play and video demonstrations with parents, via home visits and family workshops. This is backed up with a telephone helpline to listen to parents’ concerns and offer contact information with regard to routine services in the local authority.

Evaluations of the SPOKES intervention programme have shown a significant increase in children’s literacy skills, accompanied by a reduction in emotional conduct problems. The intervention has been found to be particularly effective for areas with a high proportion of low-income families.

An extensive evidence base exists on the positive impact of parenting programmes for low-income families (e.g. Family Nurse Partnerships, Intensive Years). However, as these are non-school strategies, they are outside of the scope of this review. Further details on parenting programmes can be found in the following reviews: Dretzke *et al* (2009); Stewart-Brown and McMillan (2010).

Use of early years interventions – UK evidence

The link between cognitive development and family deprivation begins at a very early age, with gaps in attainment on development tasks detectable as early as 22 months for children from poorer households (Feinstein 2003). The importance of early years environments and schooling is reinforced by findings that those children living in poverty who ‘buck the trend’ do so from an early age (detectable at age five) (Blanden 2006).

Across many of the studies we reviewed, the importance of high-quality early-years provision, targeted on poorer children, was highlighted as an important strategy for closing attainment gaps (Cassen and Kingdon 2007; Duckworth *et al* 2009; Sodha and Margo 2010). These conclusions are reinforced by the finding of the C4EO review that reviewed practices for early years provision for vulnerable groups (Coughlan *et al* 2010). Early years provision for schools with a high proportion of children in poverty is covered in the main section of the review (see Section 5).

Developing social and emotional competencies

Over the last five years, the role of social and emotional learning in education has risen up the political agenda, with national initiatives to develop emotional resilience and social skills within primary and secondary schools (Challen *et al* 2009).

A number of the studies that we reviewed proposed that social and emotional learning could play an important role in raising the attainment of children and young people living in poverty (DCSF 2008; Hayes *et al* 2009; Ofsted 2008). Emerging research suggests this may be justified. A recent meta-analysis of over 200 controlled trials in the US concluded that well-designed and carefully implemented social and emotional learning programmes significantly raise academic performance (Durlak *et al* in press). Although this meta-analysis did not specifically study children from low-income families, emerging evidence in the UK suggests that the impact of social and emotional learning programmes is greater for children from disadvantaged backgrounds (Challen *et al* 2009).

Evaluation of the government's Social and Emotional Aspects of Learning (SEAL) programme also indicates that both the primary and secondary versions of the programme can improve attainment, although no robust 'what works' evidence is available yet (Humphrey *et al* 2008).

UK evidence on support for transitions

One of the conclusions of the 'Narrowing the Gap' study was the need for schools to carefully manage the unavoidable transitions that pupils face throughout their school life (e.g. primary/secondary). This is particularly relevant for children from deprived communities who may lack the resilience and emotional support that comes with such changes (NFER 2009). This theme emerged in a number of the studies that we reviewed (DCSF 2008; Demie and Lewis 2010; Duckworth *et al* 2009).

Strategies that schools were adopting to support transitions included: appointing a 'transition leader' to manage the transition process from primary to secondary school; organised visits from primary pupils from Year 5 onwards; and the use of pupil buddies/mentors to provide support for Year 7 pupils at the beginning of secondary school (DCSF 2008; Demie and Lewis 2010; Duckworth *et al* 2009).

The evidence on 'what works' in managing transitions between school phases is reviewed in detail in the C4EO review on key stage transitions (Evans *et al* 2010).

UK evidence on strong leadership for schools in high-poverty areas

Many of the studies that we reviewed highlighted the importance of strong and visionary school leadership in meeting the needs of pupils living in poverty (Demie and Lewis 2010; Evans 2010; Mongon and Chapman 2008; NFER 2009; NUT 2009; Ofsted 2008). In many cases, high-quality leadership was reported as the driving force behind change, raising expectations and inspirational success.

Strategies of successful leadership in these schools will be familiar to school leaders, as they are recognised as good practice across all schools, independent of the focus on children in poverty (Demie and Lewis 2010; Mongon and Chapman 2008; NUT 2009). Successful approaches include:

- building a vision of success and setting clear direction
- cultivating values of respect, good behaviour and caring – supported by a clear approach to discipline
- understanding and developing staff and pupils with personal and professional support
- having clear lines of authority, responsibility, accountability and autonomy
- managing and supporting the teaching and learning programme to the highest standards
- collecting, monitoring and using information on student progress and teaching standards.

Inevitably, establishing cause and effect for outcomes of these strategies is difficult because of the widespread impact of leadership and the multiplicity of factors.

Best evidence synthesis of quantitative research

This subsection pulls together the findings of rigorous, experimental evaluations of specific classroom programmes and practices for children in poverty. This research focused on schools in areas with a high proportion of low-income families (more than 30% receiving FSM), and includes international studies as well as UK research.

What works in primary reading?

The most important goal of teaching in the primary years (key stages 1 and 2) is to make sure that all pupils become fluent, strategic and joyful readers. The importance of getting children off to a good start in reading cannot be overstated. Success in primary school is virtually synonymous with success in reading – good readers are more likely to succeed in all subjects in secondary school and beyond, while poor readers are likely to continue to have reading problems, to struggle with other subjects, and to become unmotivated and develop problems with behaviour, self-esteem and attendance. Studies find that children who are not reading well in Year 1 are very likely to be reading poorly at the end of primary school (Juel 1988). Very few recover from a poor start. As mentioned above, this issue has been highlighted as a specific risk factor for those children from disadvantaged backgrounds (DCSF 2009a; Cassen and Kingdon 2007).

A great deal is known about what it takes to learn to read. Reviews of basic research in the UK by Brooks (2007), Harrison (2000) and Rose (2006) and in the US by the National Reading Panel (2000), Snow *et al* (1998), and Taylor and Ysseldyke (2007) have emphasised the importance of systematic phonics in the teaching of early reading, as well as the importance of phonemic awareness in the early years and fluency, vocabulary and comprehension at all year levels. Yet, while it is useful to

know the elements that should be present in good reading teaching, it is not enough to simply teach teachers those elements. Professional development in specific proven approaches, using well-specified materials, is more likely to produce positive outcomes.

Slavin *et al* (2009a) carried out a comprehensive review of research on effective programmes and practices in the teaching of primary reading. Their review considered all types of pupils, but this present review focuses on those that involved pupils from deprived homes. The review focused on whole-class methods for teaching reading; a separate review by Slavin *et al* (2010) addressed remedial and preventive approaches for struggling readers.

The Slavin *et al* (2009a) review focused on three major types of whole-class approaches to improving early reading outcomes: innovations in curriculum, ICT, and instructional processes. These are discussed in the following sections.

Changing the curriculum (e.g. textbooks)

Studies of the introduction of innovative reading curricula have not generally found important outcomes for the learning of children from deprived homes. Examples of the types of curriculum evaluated include phonetic textbooks, such as the US programmes called Reading Street (Wilkerson *et al* 2006) and Open Court (Borman *et al* 2008).

ICT-based strategies

Several studies have examined the use of individualised, self-instructional ICT software in teaching primary reading. Rigorous evaluations of ICT approaches such as Plato and Waterford (Campuzano *et al* 2009) have found minimal impacts on reading. There is some correlational evidence from UK studies suggesting that classrooms making extensive use of interactive whiteboards, a whole-class technology, may improve reading outcomes (Somekh *et al* 2007). There is also evidence that embedding brief video segments in beginning reading lessons can improve reading outcomes for beginning readers (Chambers *et al* 2006, 2008).

Coaching teachers in specific teaching methods

Instructional process approaches are programmes that emphasise coaching teachers to use specific teaching methods. These include various forms of cooperative learning, in which pupils work in small groups to help one another learn reading skills. For example, a programme called *Peer Assisted Learning Strategy* (PALS) has been shown to be very effective in several US studies involving pupils from deprived homes (e.g. Calhoun *et al* 2007) (see Box 2). A cooperative learning approach emphasising systematic phonics called *Reading and Integrated Literacy Strategies* (RAILS) was found to be very effective in a US study involving mostly white pupils living in deprived areas of Pennsylvania. In a UK study in high-poverty schools, Shapiro and Solity (2008) found strong positive effects of an *Early Reading Research* (ERR) programme in which teachers were given extensive professional development in structured, systematic methods of teaching phonemic awareness, phonics, fluency, comprehension and oral reading. Six schools using ERR obtained

much better outcomes than did schools using ordinary National Literacy Strategy Lessons. After the two-year experiment, a longitudinal follow-up found that the pupils in ERR still scored substantially better than their National Literacy Strategy comparison group.

Box 2: Cooperative learning strategies in reading – example of the *Peer Assisted Learning Strategy (PALS)*

Peer Assisted Learning Strategy (PALS) is a type of peer tutoring approach that reorganises the classroom so that, for part of the day, pupils work cooperatively with each other and assume an active role in their own learning.

Teachers pair lower- and high-performing pupils, and the partners work on different activities that address the skills that they are struggling with. The pairs are changed regularly, giving all pupils the opportunity to act as coaches and players.

PALS reading promotes phonological awareness, sound–letter correspondence, decoding and fluency for beginning readers. It is a complementary strategy that teachers can use to augment their existing reading curricula (although structured materials are available). It is composed of 25–35-minute activities that are implemented two to four times a week.

Whole-school reform models

One of the most effective methods of improving reading outcomes for pupils from deprived homes is a whole-school reform model called *Success for All*, which provides extensive professional development to primary teachers in cooperative learning, systematic phonics, parent involvement and other elements. *Success for All* works with whole schools, and provides tutoring to individual children who are not succeeding in reading. Numerous US studies, including a large-scale randomised evaluation by Borman *et al* (2008), have found substantial positive effects of this approach. UK studies of *Success for All* have also found positive effects in schools serving many pupils from deprived homes (Chambers *et al* 2010; Slavin *et al* 2005a).

What works with struggling readers in primary schools?

The recognition of the great importance of early reading success has led to the creation of numerous programmes and government investments designed to help struggling readers. In the UK, for example, the Labour government introduced a programme called *Every Child a Reader* to disseminate a one-to-one tutoring model called *Reading Recovery*, originally developed in New Zealand, throughout England. *Reading Recovery* provides qualified teachers with extensive continuing professional development to help them work effectively with six- and seven-year-olds who are failing in reading (see Burroughs-Lange 2007, 2008; Policy Exchange 2009).

In the US, there has also been substantial government investment in *Reading Recovery* and other tutoring models, but also in volunteer tutoring and in small-group services. Current trends in both countries support the provision of escalating forms of intervention designed to keep children with reading problems from failing in reading. These ‘response to intervention’ schemes (see Allington and Walmsley 2007; Fuchs and Fuchs 2006; Gersten *et al* 2009) provide struggling readers with preventive

teaching (Tier 1), followed by small-group remediation (Tier 2) for those who need it, and then one-to-one tutoring or other intensive intervention (Tier 3) for the hopefully few children who have not succeeded in the less-intensive services. The purpose is to attempt to solve pupils' problems without the involvement of special education, and to use the pupil's response to the successive levels of intervention as diagnostic information, instead of using testing as the main indicator of special educational needs.

In light of the serious difficulties faced by struggling readers and the substantial investments made by government to attempt to remediate reading problems, it is important to have information on the effectiveness of alternative teaching approaches designed for these pupils. Slavin *et al* (2010) recently carried out a systematic review of research on programmes for struggling readers. The review focused on a broad array of types of solutions for pupils having difficulty learning to read in the primary years, as follows:

- one-to-one tutoring by teachers
 - phonetic
 - non-phonetic
- one-to-one tutoring by teaching assistants
- one-to-one tutoring by volunteers
- small-group tutorials
- preventive classroom teaching methods
 - cooperative learning
 - structured phonetic approaches
- Whole-school reform approaches
- using ICT.

Struggling readers – one-to-one tutoring by teachers

Programmes that provide one-to-one tutoring by qualified and well-trained teachers are, not surprisingly, very effective. However, US studies find a sharp difference between programmes that are structured and emphasise systematic, synthetic phonics, and those with less of a phonetic emphasis. In particular, studies among Year 1 pupils in disadvantaged areas find substantially better reading outcomes for phonetic programmes than for *Reading Recovery*, which has less of a phonetic focus.

Studies of *Reading Recovery* in ethnically diverse schools in London (Burroughs-Lange 2008; Hurry and Sylva 2007) did find substantial positive effects of *Reading Recovery*, although follow-up data found that the effects had diminished by Year 5. A study in mostly white high-poverty schools in Cumbria by Hatcher *et al* (1994) compared a less phonetic approach like *Reading Recovery* to a similar approach that added a strong phonetic component. The combined phonetic approach produced much better outcomes than the less phonetic approach.

Other studies of phonetic tutoring programmes – *Auditory Discrimination in Depth* (Torgesen *et al* 1997), *Early Steps* (Morris *et al* 2000; Brown *et al* 2005) and *Reading Rescue* (Ehri *et al* 2007) – all found substantial positive effects in deprived primary schools. An interesting and potentially more cost-effective US tutoring model called *Targeted Reading Intervention* is designed for high-poverty rural areas. It uses distance technology to train, observe and give feedback to teachers in their own schools, located in difficult-to-reach areas (Vernon-Feagans *et al* 2009).

Struggling readers – one-to-one tutoring by teaching assistants

Because of their lower cost and greater availability, one-to-one tutoring programmes often make use of well-trained teaching assistants rather than teachers.

Teaching assistants are quite common in UK primary schools, yet studies find that their time is often poorly used and adds little to student learning. Yet there is substantial evidence that well-trained and supervised teaching assistants can be very effective as tutors. US phonetic tutoring programmes such as *Sound Partners* (Jenkins *et al* 2004), *SMART* (Baker *et al* 2000) and *Reading Rescue* (Ehri *et al* 2007) have shown particularly strong outcomes in improving reading performance in deprived areas.

Outcomes of phonetic tutoring programmes are significantly better when delivered by teachers than by teaching assistants (see, for example, Brown *et al* 2005; Ehri *et al* 2007), yet the results obtained by the teaching assistants are still very positive, and the use of teaching assistants as tutors for struggling readers clearly adds more to reading outcomes than do more traditional classroom assignments.

Struggling readers – one-to-one tutoring by volunteers

Many schools in poor areas are able to recruit local volunteers to work with struggling readers, and this was the emphasis of the US ‘America Reads’ policy initiative. If volunteers are well trained, well coached and use structured, phonetic materials, they can produce gains like those of teaching assistants acting as tutors (Allor and McCathren 2004; Meier and Invernizzi 2001;).

Struggling readers – small-group tutorials

For struggling readers with less serious problems, small group teaching (in groups of two to six) can be effective, if teachers or teaching assistants receive adequate training and coaching to use well-structured, phonetic approaches. For example, an Australian study mostly involving deprived white children found substantial positive effects of a very structured model called *Corrective Reading* (Hempenstall 2008).

A US programme called *Quick Reads* has also had good outcomes among pupils in deprived areas (Vadasy and Sanders 2008), as has a Canadian programme called *Empower Reading* (Lovett *et al* 2000). On average, small-group tutorials with a strong phonetic base achieved outcomes similar to those of one-to-one tutoring by teaching assistants, but the gains were smaller than those found in studies of structured phonics programmes delivered by teachers.

Struggling readers – preventive classroom teaching methods

The easiest reading problems to remediate are, of course, those that never appear in the first place, due to effective classroom teaching. Slavin *et al* (2010) examined outcomes of whole-class teaching methods for pupils in the lowest 25 per cent of their classes at pre-test. In contrast to the tutoring studies, which generally focused on Year 1 pupils, the preventive classroom teaching methods were evaluated in all of the primary levels, Years 1 to 6.

Some of the classroom teaching methods, used for all pupils in the class, were surprisingly effective for the lowest-achieving pupils. *Cooperative Integrated Reading and Composition (CIRC)*, a cooperative learning approach also used in the UK as *Power Teaching Reading*, had positive effects in several studies involving white working-class pupils (Bramlett 1994; Stevens and Slavin 1995 a and b).

Another US cooperative learning programme called *Peer Assisted Learning Strategy (PALS)* had strong positive effects on learning for low-achieving Year 1 pupils in deprived schools (Mathes *et al* 1998, 2001; Mathes and Babyak 2001) (see Box 2). A recent evaluation of a programme modelled on *PALS* in Fife, Scotland, showed positive impacts on reading (Tymms *et al* 2009) and a US cooperative learning programme called *Reading and Integrated Literacy Strategies (RAILS)* showed positive effects among white working-class pupils in rural Pennsylvania (Stevens *et al* 2008).

Programmes using a school-wide approach emphasising phonics have also had positive effects on low achievers in deprived schools. An example is a US programme called *Direct Instruction* (Stockard 2008).

Struggling readers – whole-school reform approaches

Perhaps the most effective and extensively evaluated approach designed to improve reading performance in whole schools is a comprehensive reform model called *Success for All* (Slavin *et al* 2009b). Such schools provide extensive continuing professional development on the effective use of cooperative learning approaches (based on *CIRC*, described previously). Pupils who have difficulties may receive small-group or one-to-one tutoring. The schools emphasise parent and community involvement and staff members systematically attend to issues such as attendance, behaviour, health and mental health.

Numerous studies of *Success for All* in the US have found positive effects on students' reading performance, but effects for the lowest-achieving 25 per cent are particularly large, approaching the levels attained in studies of one-to-one phonetic tutoring by teachers (Borman *et al* 2007; Correnti 2009; Madden *et al* 1993; Ross *et al* 1996). Studies evaluating *Success for All* in the UK have also found positive outcomes in deprived areas throughout England (Chambers *et al* 2010; Slavin *et al* 2005a). There is also longitudinal evidence of longlasting impacts (Borman and Hewes 2003).

A key difference between whole-school approaches and time-limited tutoring is that whole-school approaches are used across all year levels, so pupils experiencing difficulties can receive high-quality teaching and appropriate intervention as needed over the years.

Struggling readers – using ICT

For many years, schools have attempted to individualise teaching for struggling readers by assigning them work on self-paced computer programs. A large, randomised evaluation of modern ICT reading programs used in deprived schools in the US by Dynarski *et al* (2007) and Campuzano *et al* (2009) found no benefits of ICT for struggling readers in the first or fourth grades. This finding is consistent with outcomes of most studies of ICT in reading (see Kulik 2003).

Conclusion: interventions for struggling readers in primary schools

Among phonetic tutoring programmes, one-to-one tutoring by qualified teachers is more effective than one-to-one tutoring by teaching assistants or volunteers and is more effective than small-group tutorials. However, whole-class preventive strategies are almost as effective as one-to-one tutoring, and have evidence of longlasting effects. This does not imply that schools serving many children in poverty should adopt whole-class or whole-school reforms instead of providing tutoring, but it does imply that such schools should adopt preventive whole-class strategies and then provide tutoring for the hopefully small numbers of pupils who will still need it.

What works in secondary reading?

Learning to read is the most important goal for all primary pupils, but in secondary school, the focus shifts to reading to learn. That is, secondary students must know how to find the meanings of increasingly difficult texts in many genres.

The teaching of reading in secondary schools is primarily the teaching of study strategies, methods to help pupils make sense of what they are reading, connect it to what they already know, use it for reports or other written products and recall it in the future. In addition, there are many secondary pupils who did not learn to read adequately in primary school and still need help to build decoding, fluency and basic comprehension strategies.

Because reading is not a separate course for most secondary students, most studies at the secondary level involve remedial teaching for pupils who are not prepared for the demanding content taught in secondary school (and beyond). Slavin *et al* (2008) reviewed research on all types of approaches designed to improve the reading of students in secondary schools in deprived areas.

Changing the curriculum

One of the most common approaches to improving reading performance in secondary schools serving many students from deprived homes is to adopt innovative textbooks or curriculum series. Although adopting new texts and curricula such as *Language!* and *McDougal-Littel* is a common strategy in the US in deprived

schools, no studies of such programmes in the US, the UK or elsewhere met the standards of this review. However, as noted earlier, studies of curricular innovations in the upper primary years of programmes such as *Rigby*, *Open Court Reading*, *Reading Street*, *Harcourt* and *Houghton Mifflin* have been evaluated in US studies meeting the standards of this review, but they showed minimal impacts on reading outcomes.

ICT-based approaches

Many secondary schools use individualised computer software as a supplement to ordinary teaching to help struggling readers. Research evaluating such ICT approaches in schools in deprived areas has found modest benefits of ICT programmes such as *Jostens/Compass Learning* and *Computer Curriculum Corporation (CCC) SuccessMaker*. For example, Liston (1991) evaluated CCC (also used widely in the UK) in 49 high schools in South Carolina with remedial 10th graders and found modest and inconsistent differences between experimental and control groups. A programme called *Accelerated Reader*, which uses computers to suggest reading assignments for students and then to test them on their comprehension, was also found to have minimal effects in large studies in deprived secondary schools in Mississippi (Ross and Nunnery 2005; Ross *et al* 2005).

Changing teaching methods

As was true in research in primary schools, cited earlier, the category of secondary reading approaches with the strongest evidence of effectiveness in schools in deprived areas is programmes that emphasise cooperative learning and teaching of thinking and learning skills, such as *PALS* (Fuchs *et al* 1999), *Student Team Reading* (Stevens and Durkin 1992) and *The Reading Edge* (Chamberlain *et al* 2007; Slavin *et al* 2005b).

Mixed-methods approaches

Although traditional supplemental ICT approaches have not shown important positive effects on secondary reading outcomes, a programme called *Read 180*, which combines ICT with cooperative learning, strategy teaching and other elements, has been extensively evaluated and found to be effective in studies in deprived areas of the US (e.g. Nave 2007; Papelwis 2004; Woods 2007).

What works in primary mathematics?

After reading, the most important outcome of schooling is mathematics. Success in mathematics is a key predictor of success in a broad range of professions, especially those involving science, engineering and business (RAND 2003). Students in deprived areas are likely to underperform in this key topic.

At the primary level, innovations in mathematics fall into three main categories: curriculum-based, ICT-based and instructional process approaches.

Changing the mathematics curriculum

A major focus of mathematics reform in primary schools is the curriculum. Mathematics experts have long advocated approaches that place a strong emphasis on problem solving, multiple solutions and conceptual rather than algorithmic teaching. Recently, this has involved strategies that require children to more actively construct their mathematical understandings, rather than rely on rote memorisation. Yet, at least on traditional measures of mathematics learning, studies suggest that such constructivist approaches do not make much of a difference.

An important study in schools throughout the US by Sconiers *et al* (2003) evaluated several innovative constructivist programmes, including *Everyday Mathematics*, *Math Trailblazers* and *Investigations in Number, Data, and Space*, and found very modest differences for pupils in general and for a deprived subgroup. Outcomes were equally disappointing for all topics of mathematics, including algebra and probability as well as computations and measurement.

Studies of a conservative, algorithmic approach called *Saxon Math* also showed no benefits in a Georgia state-wide study by Resendez and Azin (2005), and studies of mainstream textbooks such as *Houghton Mifflin* (Edstar 2004) and *Scott Foresman-Addison Wesley* (Resendez and Sridharan 2005) also showed minimal effects.

ICT-based approaches

In elementary mathematics, several studies in deprived areas have shown positive effects, but the outcomes are quite mixed. Studies of *Jostens/Compass Learning* and *CCC SuccessMaker* in deprived areas have often found positive effects (e.g. Hunter 1994; Ragosta 1983; Spencer 1999). However, higher-quality randomised studies have had much less positive outcomes (e.g. Alifrangis 1991; Becker 1994).

Changing teaching methods

Cooperative learning programmes have generally had positive effects in primary mathematics, but outcomes are inconsistent. A programme called *Student Teams-Achievement Divisions* was found to have positive effects in studies in deprived areas in Israel (Mevarech 1991) and Indonesia (Suyanto 1998), but a large randomised study in English primary schools found no effects (Tracey *et al* 2010). A programme called *TAI*, which combines cooperative learning with individualised teaching, had strong positive effects on computations but not concepts in US studies in deprived areas (Slavin and Karweit 1985). Approaches involving teaching teachers to use effective means of managing and motivating mathematics classes found positive effects in high-poverty areas of the US. These included programmes called *Consistency Management and Cooperative Discipline* (Freiberg *et al* 1990, 2001; Opuni 2006) and *Missouri Mathematics* (Good and Grouws 1979; Slavin and Karweit 1985). A supplemental small-group tutorial approach was found to be successful in a study in a deprived area of the US (Fuchs *et al* 2005).

What works in secondary mathematics?

The kinds of innovations evaluated in secondary mathematics are similar to those studied in primary schools, and the outcomes are similar as well.

Changing the curriculum

As in primary schools, studies of constructivist curricula emphasising problem solving, concept development and multiple solutions have not been found to increase performance on traditional measures of mathematics. US studies in deprived areas have found disappointing effects for the widely used *University of Chicago School Mathematics Project* (e.g. Hedges *et al* 1986; Thompson *et al* 2003; Swafford and Kepner 1980), and similar outcomes have been reported for other constructivist approaches (e.g. Clarkson 2001; McCaffrey *et al* 2001; Lott *et al* 2003; Schneider 2000;).

As in the primary grades, studies of the algorithmic *Saxon Math* programme have shown mixed and mostly modest outcomes in deprived areas (Denson 1989; Resendez and Azin 2005; Resendez *et al* 2005). In a study with mostly white students in deprived Mississippi schools, Roberts (1994) found no effects of *Saxon Math*.

ICT-based approaches

As in primary schools, effects of ICT in deprived areas are quite mixed, but modestly positive on average. A major randomised study in Hawaii by Cabalo *et al* (2007) found no effects of a popular modern programme called *Cognitive Tutor*, but a study in diverse high schools in Pittsburgh found positive outcomes (Koedinger *et al* 1997).

Similarly, studies of a modern ICT approach called *I Can Learn* found mostly disappointing outcomes in deprived areas (e.g. Brooks 1999; Kerstyn 2001) but other studies did find positive outcomes (e.g. Kirby 2006; Oescher and Kirby 2004). A study of *Jostens/Compass Learning* in rural Georgia reported modest positive effects (Hunter 1994), as did studies of the *PLATO* ICT model (Baker 2005; Thayer 1992). However, a major national US randomised evaluation of three modern ICT models for secondary mathematics found no benefits in comparison to control groups (Campuzano *et al* 2009; Dynarski *et al* 2007).

Specific teaching methods

Cooperative learning programmes generally produce positive outcomes in secondary mathematics. US studies in deprived areas have found positive effects for a programme called *Student Teams Achievement Divisions (STAD)* (Reid 1992; Slavin and Karweit 1984), and Israeli studies of a cooperative learning approach called *IMPROVE* have also found very positive impacts on secondary mathematics performance (Kramarski *et al* 2001; Mevarech and Kramarski 1994, 1997).

Conclusion: interventions for teaching mathematics in schools with a high proportion of pupils in poverty

The results for 'what works' in teaching mathematics for children living in poverty in many ways mirror those for teaching reading. In general, changing the curriculum at primary and secondary level makes little difference to outcomes, despite this being a common strategy for schools. ICT-based approaches show greater promise for mathematics than for reading, although the results are variable across different interventions and evaluations.

The use of specific teaching methods, such as cooperative learning, shows positive results, although these are slightly more variable in mathematics than in reading, although more consistent for secondary mathematics. Using teaching strategies that manage and motivate mathematics classes improves learning outcomes, and has been shown to be particularly powerful in schools in high-poverty regions.

What works in early childhood education programmes?

Recent reviews of educational programmes and practices for children between the ages of three and five, or before they begin reception in England, have found that investing in the early education of children from poor communities pays off in terms of later success in school (Camilli *et al* 2010; Chambers *et al* 2006; Coghlan *et al* 2010;; Sylva *et al* 2004). A longitudinal project evaluating the effects of pre-school and primary education (*Effective Provision of Pre-School Education: EPPE*) also found that pre-school attendance can better prepare children living in poverty for success in primary school (Sylva *et al* 2004).

Recent brain research and other research on cognitive development are reinforcing education evidence that early education is crucial in getting children off to a good start in life (Molfese and Westberg 2008; National Research Council and Institute of Medicine 2000).

Based in part on this research, local and national policy-makers are establishing new early years programmes and trying to improve the quality of the ones that exist. The question before them is what types of programmes best prepare young children, particularly children from deprived backgrounds, to succeed in primary school?

Following the Best Evidence Encyclopaedia inclusion criteria described above, Chambers *et al* (2010) reviewed the evidence for the effectiveness of early childhood programmes.

The studies compared children taught in classes using a given programme or specified replicable practice to those using an alternative programme or standard practice. The group setting could have been pre-kindergarten or nursery classes in primary schools, childcare centres, Head Start centres (US) or Sure Start centres (UK). Any early childhood setting that offered a regularly scheduled educational programme to a group of pre-schoolers was included. A total of 38 studies evaluating 27 different programmes met the criteria for outcomes assessed at the end of pre-school/nursery and/or reception/kindergarten. The participants of almost every study

were children from low-income communities. In many studies, a large percentage of the children had English as an additional language.

Of the programmes reviewed, only seven are available for implementation in the UK (*Breakthrough to Literacy*, *Creative Curriculum*, *Curiosity Corner*, *High/Scope*, *Montessori*, *PATHS* and *Tools of the Mind*). Of these, however, only *Curiosity Corner* had strong evidence of effectiveness, and *Breakthrough to Literacy* had moderate evidence of effectiveness. All of these programmes were evaluated in communities with a high proportion of families living in poverty. Averaging across *all* included studies of the interventions, there were small effects at the end of pre-school for all outcomes – language, literacy, phonological awareness, mathematics and cognition.

All of the programmes with strong evidence of effectiveness had a clear structure, a combination of teacher-directed and child-initiated activities and some focus on academic outcomes. These findings are supported by the US National Early Literacy Panel's (NIL 2008) review of factors that enhance early literacy, which showed that early childhood programmes (for four-year-olds), with explicit literacy instruction and clear teaching objectives, improve children's school readiness.

If teachers provide carefully planned experiences designed to move children from low-income communities towards success on academic outcomes, this gives the children a significant advantage as they enter primary school. It is also easier for teachers to monitor the children's progress if it is clear what objectives they are working towards.

Beyond the curricular emphasis, another factor that differentiates effective programmes is the degree of support that the teachers are provided in implementing a new programme. In most of the studies in this review, teachers received more support for implementation of the programme than teachers typically receive when programmes are implemented at scale. This suggests that programme developers need to build into their programmes the ongoing support that teachers need to learn to implement innovative forms of teaching, and researchers need to conduct research on educational programmes as they are implemented at scale, without the additional support often provided in experimental studies.

6 What are the implications for teachers, head teachers, school governors and local authority children's services?

Key messages

- Structured early years programmes prepare children living in poverty to succeed in primary school.
- Curriculum matters less than people might think.
- Traditional forms of ICT use only modestly raise outcomes.
- Changing teaching practices, through extensive continuing professional development, is the most powerful classroom strategy for closing attainment gaps. In particular, using structured phonics instruction, cooperative learning, frequent assessment and teaching meta-cognitive skills (e.g. 'learning to learn') can significantly raise outcomes.
- Using proven classroom management strategies closes attainment gaps.
- One-to-one tutoring can be very effective for struggling readers, but more cost-effective strategies may be appropriate.
- A wide range of additional, promising strategies is available to close the attainment gaps for children in poverty.

The research reviewed in this report has important implications for the improvement of primary and secondary schools in deprived areas of the UK, but these implications are mostly indirect. Few of the qualifying studies took place in the UK; the great majority were done in deprived areas of the US, sometimes with white lower-class students but more often with African-American and Hispanic pupils whose cultural characteristics are not the same as those of UK students.

Still, a consistent finding across the many studies in this review is that programmes shown to be effective for any one ethnic group or socio-economic group tend to also be effective for others, and programmes found ineffective are generally ineffective for all subgroups. While there are differences in terms of attainment in relation to ethnicity, these are not due to types of teaching working better for some ethnic groups than others. This finding suggests that programmes evaluated elsewhere may be effective in deprived areas of the UK. Such programmes should be adapted to the UK context and evaluated in the UK to establish whether or not effective programmes will thrive on British soil.

Bearing in mind this key limitation, there are implications for decision-makers about the types of approaches worth emphasising and evaluating in schools in deprived areas of the UK.

Structured early years programmes prepare children living in poverty to succeed in primary school

To improve learning outcomes for children in poverty, schools should have universal access to early years programmes that provide explicit teaching in phonics and other literacy skills. Early years teachers need to participate in initial training and follow-up support to thoroughly embed new teaching strategies.

Curriculum matters less than anticipated

Innovations primarily focusing on improving curriculum materials, such as introducing new textbooks or objectives, are unlikely to make a significant difference for primary or secondary schools in deprived areas. Curriculum matters, of course, because teachers should focus on objectives believed to be important and useful. However, it is unlikely that changing textbooks or curriculum content will in itself lead to improved outcomes in reading or mathematics. Combining outcomes across 77 studies of curricular innovations in reading and mathematics, Slavin (2010) found an overall weighted effect size of +0.06, not statistically significant from zero.⁵

Decision-makers should consider professional development and coaching in effective teaching strategies, which make much more of a difference.

Traditional forms of ICT only modestly raise outcomes

Studies of traditional forms of ICT, in which pupils work on individualised, self-instructional materials as a supplement to regular teaching, find modest positive effects in primary mathematics and near-zero effects in reading. Slavin (2010) found relatively positive outcomes (effect size = +0.19) across 38 qualifying evaluations of ICT in primary mathematics, but the average effect size was only +0.08 in 40 studies of secondary mathematics and +0.08 in 52 studies of primary and secondary reading.

Research on integrated, whole-class applications of technology, such as interactive whiteboards and embedded multimedia, shows promise, but additional experiments are needed to establish the effectiveness of such approaches. Decision-makers should carefully consider the evidence base behind any specific ICT-based intervention.

⁵ An effect size is calculated to indicate the impact of a programme in standard units. The use of standard units means that scores can be compared across a number of different evaluations or programmes.

Changing teaching practices, through extensive continuing professional development, is a key way of closing attainment gaps

Across all subjects and types of schools, the approaches most likely to improve learning outcomes for poor pupils are ones that provide extensive continuing professional development to teachers to help them make effective use of methods such as cooperative learning, classroom management and motivation, and teaching of meta-cognitive skills.

Across 100 qualifying studies, the weighted mean effect size for such 'instructional process' approaches averaged +0.27. Among this category, the largest effects and the largest numbers of studies involved forms of cooperative learning.

However, fundamental change in teaching practice is difficult. Teachers need extensive, engaging workshops to learn new strategies and then coaching to successfully implement and maintain them. On-site training – where coaches visit teachers' classes, provide feedback, organise group meetings and discuss teaching strategies – are much more effective than external, one-stop courses.

Effective teaching uses proven classroom management strategies

A consistent finding for interventions that improve learning outcomes across all subjects and phases is the use of identified strategies for classroom management and motivating and engaging all learners. These include maintaining a rapid pace of instruction, using all-pupil responses (e.g. electronic response devices, assessment for learning), using frequent questioning in which pupils know they may be called upon to respond, and making use of cooperative learning.

Effective classroom management strategies foster individual pupils' responsibility for learning by establishing clear classroom rules and behaviours. They create physical and emotional environments that promote learning and develop a common language for discipline (CSRQ Center 2006).

Using cooperative learning (structured groupwork), frequent assessment and teaching thinking and learning skills significantly raise outcomes

Comprehensive, mixed-method approaches that combine extensive continuing professional development for teachers on cooperative learning and the teaching of meta-cognitive skills (thinking and learning skills), with (in reading) the use of systematic phonics, can have substantial and lasting effects on learning outcomes in deprived areas. Examples include the *Success for All* comprehensive reform model in primary reading and the *Read 180* and *Reading Edge* programmes in secondary

reading. Successful interventions also use frequent, brief assessments to monitor progress and provide pupil feedback.

Decision-makers looking to close attainment gaps for children living in poverty should consider adopting comprehensive programmes that develop meta-cognitive skills and cooperative learning strategies.

One-to-one tutoring can be very effective for struggling readers, but more cost-effective strategies may be appropriate

For struggling readers from deprived backgrounds, one-to-one tutoring by qualified teachers using structured, phonetic programmes can be very effective. Less expensive alternatives, such as having teaching assistants use phonetic tutoring programmes and small-group tutorials, are less effective but may be more cost-effective solutions to try before providing a pupil with very expensive one-to-one tutoring.

Preventive strategies, especially whole-class cooperative learning, can greatly reduce the number of pupils who need any sort of remediation, and the *Success for All* comprehensive whole-school reform model has particularly strong and longlasting effects for struggling readers from deprived homes.

To help struggling readers living in poverty, decision-makers should aim to improve whole-class teaching first, then explore specific strategies for struggling pupils.

A wide range of additional, promising strategies are available to close the attainment gaps for children living in poverty

Alongside the specific strategies identified in the quantitative analysis of this review, we also identified some additional promising strategies that schools in the UK are adopting to improve the learning outcomes of pupils living in poverty. These included:

- rigorous monitoring of progress and use of data
- raising pupil aspirations using engagement/aspiration programmes
- engaging parents (particularly hard-to-reach parents) and raising parental aspirations
- developing social and emotional competencies
- supporting school transitions
- strong and visionary leadership.

Although the evidence base is still emerging for these strategies, decision-makers in schools should consider these approaches in relation to their overall school strategy.

7 Conclusions and main messages

In this review we have adopted a dual approach to identifying successful strategies for closing the attainment gaps for children living in poverty (including white working-class boys) – a detailed best-evidence synthesis of classroom programmes and interventions, supported by a qualitative analysis of broader, promising approaches at the school-wide level.

A common finding was that classroom strategies shown to be effective for any one ethnic group or socio-economic group tend to also be effective for others, hence our review focuses on improving learning outcomes for all children living in poverty, including white working-class boys. If adopted effectively, the strategies identified throughout this review should raise outcomes for this particular group.

The central theme across our findings is that it is the quality of teaching that matters most. Changing instructional processes and teaching methods (e.g. cooperative learning, phonics instruction, meta-cognitive strategies) delivers the greatest improvements in learning outcomes for children from deprived backgrounds. Simply changing the mode of delivery, through ICT or new curricula, is much less effective. These principles apply across all educational phases, from early years settings to secondary education.

The most powerful approaches we identified came through the use of well-specified, well-supported and well-implemented programmes and practices, incorporating extensive continuing professional development that is delivered within the school context. Early intervention is particularly effective, where preventative whole-class strategies are adopted first followed by tutoring for the small numbers of pupils who still need it. If specific tutoring is required, teaching assistants as well as classroom teachers can deliver good learning outcomes, as long as they are well supported.

Schools that are successfully closing attainment gaps work hard to ensure that resources are targeted at the children who need them most. They rigorously monitor pupil progress (particularly of those in vulnerable groups) and use this data to inform targets, direct deployment of resources and monitor the impact of interventions.

Outside of the immediate classroom environment, we identified a range of broader school-based strategies to close attainment gaps, which show promise in the long term. These include: developing social and emotional competencies using social and emotional learning programmes; raising pupil aspirations through targeted interventions; supporting school transitions; and engaging hard-to-reach parents in their child's learning from an early age. The importance of strong and visionary leadership, which creates a culture of high expectation and professionalism, was emphasised throughout our findings.

Clearly, the responsibility to close attainment gaps for young people in poverty spreads much wider than schools. Nevertheless, this review highlights the important role that schools play, and hopefully sheds some light on some practical strategies that have been proven to work.

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Appendix 1: Research review methods

This review used a systematic method of reviewing educational research adapted from the strategies used in the Best Evidence Encyclopaedia (BEE – www.bestevidence.org.uk). The method, described by Slavin (2008), is similar to meta-analysis. This means that there are well-specified procedures for searching the literature, for including relevant and methodologically adequate studies and for pooling or averaging findings across studies. Study outcomes are summarised as effect sizes, the experimental–control mean difference divided by the control group’s standard deviation (see Lipsey and Wilson 2001).

Literature search procedures

Broad literature searches were carried out in an attempt to locate every study that could possibly meet the inclusion requirements. Electronic searches were made of educational databases, and tables of contents of recent journals were searched manually. Reference lists in recent articles were used to seek earlier articles that might meet the inclusion criteria. Studies carried out since 1970 and reported in English were examined for inclusion.

Inclusion criteria

This review focused on studies that compared pupils who experienced a given experimental programme or practice to similar pupils in a control group who continued to experience traditional methods. These studies can indicate how much additional learning there was due to the use of a programme or practice, since the control group’s learning is a good estimate of what the experimental pupils would have learned if they had not received the programme. More specifically, studies had to meet the following criteria to be emphasised in this review:

- The studies evaluated programmes or practices for pupils in primary and secondary schools.
- Most pupils in the studies had to be from deprived homes. As one common indicator, studies were included if at least 30 per cent of pupils qualified for FSM.
- The studies compared pupils taught in classes using a given programme or practice to those in control classes using standard methods.
- Studies could have taken place in any country but the report had to be available in English. Studies that took place in the UK were emphasised as appropriate.
- Random assignment to conditions or matching had to be used. Studies lacking control groups (such as pre–post studies) were excluded. Pre-tests or other variables had to be available to indicate that experimental and control groups were equivalent before the treatment began.
- Outcome measures had to quantitatively assess achievement in reading and/or mathematics. Experimenter-made measures of outcomes that would give an advantage to the experimental group were not included.

- A minimum study duration of 12 weeks was required.
- Studies had to have at least two teachers and 20 pupils in each treatment group.

For additional details on the review methods, see Slavin (2008, 2010) or any of the reviews in the Best Evidence Encyclopaedia.

Appendix 2: Review parameters

Centre for Excellence and Outcomes in Children and Young People's Services Specification Parameters for Scoping Studies

1. C4EO theme: Schools and Communities

2. **Priority 4:** Effective classroom strategies for narrowing the gap in educational achievement for children and young people from poor backgrounds, especially white working-class boys.

3. Context for this priority:

This priority reflects key concerns and areas for improvement set out in *21st century schools* for those children and young people with additional needs who present schools and other services with particular challenges. We know that there is a substantial gap between the educational attainment of young people with particular characteristics (especially those living in poverty), compared with the progress of other groups. Another way of conceptualising 'narrowing the gap' is to think about 'breaking the link' between family/individual characteristics and circumstances on the one hand and achievement on the other.

Other relevant policy initiatives include the Extra Mile project (designed to raise aspirations and attainment in schools serving deprived communities) and the 'pupil premium' proposal, which formed part of the 2010 Liberal Democrat Manifesto and has been endorsed as a policy initiative by the current coalition government. Under this proposal, schools serving children from deprived neighbourhoods would get additional resources to cut class sizes, pay for one-to-one tuition and introduce catch-up lessons.

A C4EO review has already been commissioned on narrowing the gap for children with additional needs (Narrowing the gap in educational achievement and improving emotional resilience for children and young people with additional needs). This new review will complement the existing report by focusing on classroom interventions for children and young people from poor backgrounds, particularly white working-class boys.

The work programme for the priority should build upon the seminal work of the *Narrowing the Gap* Programme (www.c4eo.org.uk/narrowingthegap/default.aspx?themeid=9&accesstypeid=1) and the considerable research base that exists to support this.

The key Every Child Matters (ECM) outcomes for this priority are:

- enjoy and achieve
- achieve economic wellbeing.

4. Main review questions to be addressed in this review:

1. What works best in narrowing the achievement gap for children and young people from poor backgrounds, and particularly for white working-class boys?
2. What are the implications for teachers, head teachers, school governors and local authority children's services?

5. Which cross-cutting issues should be included?

The key cross-cutting issues for this priority are:

- workforce development
- leadership in schools
- early intervention
- child poverty.

Links to existing C4EO themes:

- Child Poverty theme: the delivery of effective area-wide strategies
- Early Years theme: narrowing the gap priority
- Vulnerable Children (particularly looked-after children) theme: improving educational achievement priority
- Schools and Communities theme: narrowing the gap priority
- *Narrowing the Gap* programme – led by Christine Davies

6. Definitions for any terms used in the review questions:

In relation to strategies used by schools and their partners, these include both universal strategies and strategies targeted specifically on children and young people (CYP) with additional needs (as long as there is evidence of effectiveness for CYP with additional needs).

A focus on teaching and learning, especially in literacy and numeracy, may be particularly important for children with additional needs.

7. What will be the likely geographical scope of the searches?

The review would use three main methods to identify relevant literature:

- existing searches for Schools and Communities theme priority 1 – children with additional needs – approximately 250 items
- new searches using the same parameters, but focusing on poverty and white working-class boys
- additional items identified by DFE, the Theme Advisory Group or the review team (in agreement with NFER).

The research should focus largely on the UK, but the scope should extend to cover relevant evidence from other English-speaking countries, especially the US.

8. Age range for CYP:

4–19

9. Literature search dates:

Start year: 2003, start of ECM policies. (However, the review team can include some findings from research published earlier, if directly relevant to the review questions.)

10. Suggestions for keywords to be used for searching the literature:

Keywords and phrases:

- children at risk of failing, underachieving or exclusion
- teaching and learning effectiveness for children living in poverty
- teaching and learning effectiveness for white working-class boys.

11. Suggestions for websites, databases, networks and experts to be searched or included as key sources:

- DFE, EHRC, CPU, Barnardo's, JRF and CSJ
- AEI, ASSIA, BEI, BEIFC, CERUK*plus*, ERIC, PsycINFO and Social Policy and Practice.

12. Any key texts/books/seminal works that you wish to see included?

- Publications from *Narrowing the Gap* programme and references lists
- Extra Mile project publications
- *Pockets of poverty* publication (DCSF/DfE).

13. Anything else that should be included or taken into account?

No

Appendix 3: Search results and strategy

Source	Items found	Items selected for consideration	Items identified as relevant to this study
Databases			
Applied Social Sciences Index and Abstracts (ASSIA)	178	16	4
Australian Education Index (AEI)	514	2	1
British Education Index (BEI)	336	40	19
ERIC	3,076	10	2
PsycINFO	1,416	2	1
Social Policy and Practice	685	19	4
Internet databases/portals			
British Education Internet Free Collections	60	8	
CERUK <i>plus</i>	n/a	n/a	
Websites			
Barnardo's	2		1
Centre for Social Justice	2		2
Child Poverty Unit	6		1
Department for Education	11		3
Equality and Human Rights Commission	3		
Joseph Rowntree Foundation	4		2
Runnymede Trust	1		

Search strategy

This section provides information on the keywords and search strategy for each database and web source searched for the new review focusing on poverty and white working-class boys.

Searches focused largely on the UK, but the scope covered relevant evidence from other English-speaking countries, especially the US.

All searches were limited to publication years 2003–2010, in English language only.

Brief descriptions of each of the databases searched, together with the keywords used in the searches, are outlined below. The search strategy for each database reflects the differences in database structure and vocabulary. Smaller sets of keywords were used in the more specialist web-based databases. Throughout, the abbreviation 'ft' denotes that a free-text search term was used.

Applied Social Sciences Index and Abstracts (ASSIA)

(searched via CSA Illumina 07/06/10)

ASSIA is an index of articles from over 600 international English language social science journals.

Additional needs set

- #1 Boys
- #2 Working class boys
- #3 Gender differences
- #4 Lower class (ft)
- #5 #1 or #2 or #3 or #4
- #6 Poverty
- #7 Low income families
- #8 Disadvantaged children
- #9 Socioeconomic status
- #10 Social exclusion
- #11 Poor children
- #12 Family support
- #13 Child poverty (ft)
- #14 Free school meals (ft)
- #15 Welfare recipients (ft)
- #16 Parent support (ft)
- #17 #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16

Educational achievement set

- #18 Academic achievement
- #19 Underachievement
- #19 Educational achievement (ft)
- #20 Low achievement (ft)
- #21 Improving achievement (ft)
- #22 Improving performance (ft)
- #23 Academic failure (ft)
- #24 Outcomes of education (ft)
- #25 Narrowing the gap (ft)
- #26 #18 or #19 or #20 or #21 or #22 or #23 or #24 or #25
- #27 #5 and #26
- #28 #5 and #17 not #26

Australian Education Index (AEI)

(searched via Dialog Datastar 03/06/10)

AEI is Australia's largest source of education information covering reports, books, journal articles, online resources, conference papers and book chapters.

Additional needs set

- #1 Boys (ft)
- #2 Sex differences (ft)
- #3 Males
- #4 Gender differences (ft)
- #5 Working class
- #6 Lower class (ft)
- #7 #1 or #2 or #3 or #4 or #5 or #6
- #8 Child poverty (ft)
- #9 Poverty
- #10 Low income
- #11 Economically disadvantaged
- #12 Disadvantaged
- #13 Socioeconomic status
- #14 Welfare recipients
- #15 Social exclusion (ft)
- #16 Poor children (ft)
- #17 Family support (ft)
- #18 Parent support (ft)
- #19 #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18

Educational achievement set

- #22 Educational achievement
- #23 Academic achievement
- #24 Low achievement
- #25 Improving achievement (ft)
- #26 Improving performance (ft)
- #27 Underachievement
- #28 Academic failure
- #29 Outcomes of education
- #30 Outcomes
- #31 Narrowing the gap (ft)
- #32 Educational experience
- #33 #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32
- #34 #7 and #33
- #35 #21 and #33 not #34

British Education Index (BEI)

(searched via Dialog Datastar 02/06/10)

BEI provides information on research, policy and practice in education and training in the UK. Sources include over 300 journals, mostly published in the UK, plus other material, including reports, series and conference papers.

Additional needs set

- #1 Boys
- #2 Sex differences
- #3 Males (ft)
- #4 Gender differences (ft)
- #5 Working class
- #6 Lower class
- #7 #1 or #2 or #3 or #4 or #5 or #6
- #8 Child poverty (ft)
- #9 Poverty
- #10 Free school meals (ft)
- #11 Low income (ft)
- #12 Economically disadvantaged (ft)
- #13 Disadvantaged
- #14 Socioeconomic status
- #15 Welfare recipients
- #16 Social exclusion (ft)
- #17 Poor children
- #18 Family support (ft)
- #19 Parent support (ft)
- #20 Takeup and benefits (ft)
- #21 #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20

Educational achievement set

- #22 Educational achievement
- #23 Academic achievement
- #24 Low achievement
- #25 Improving achievement (ft)
- #26 Improving performance (ft)
- #27 Underachievement
- #28 Academic failure
- #29 Outcomes of education
- #30 Outcomes
- #31 Narrowing the gap (ft)
- #32 Educational experience
- #33 #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32
- #34 #7 and #33
- #35 #21 and #33 not #34

British Education Index Free Collections

(searched 04/06/10)

The free collections search interface of the British Education Index (BEI) (formerly the British Education Internet Resource Catalogue) includes access to a range of freely available internet resources as well as records for the most recently indexed journal articles not yet included in the full BEI subscription database.

- #1 Boys
- #2 Sex differences
- #3 Working class
- #4 Lower class
- #5 #1 or #2 or #3 or #4
- #6 Poverty
- #7 Low income groups
- #8 Economically disadvantaged
- #9 Socioeconomic status
- #10 Social exclusion (ft)
- #11 Pauper children
- #12 #6 or #7 or #8 or #9 or #10 or #11
- #13 Academic achievement
- #14 Low achievement
- #15 Underachievement
- #16 Academic failure
- #17 Outcomes of education
- #18 Narrowing the gap (ft)
- #19 #13 or #14 or #15 or #16 or #17 or #18
- #20 #5 and #19
- #21 #12 and #19

CERUKplus

(searched 02/06/10)

The CERUKplus database provides access to information about current and recently completed research, PhD-level work and practitioner research in the field of education and children's services.

- #1 Boys
- #2 Sex differences (ft)
- #3 Males (ft)
- #4 Gender differences (ft)
- #5 Working class
- #6 Lower class
- #7 Child poverty
- #8 Free school meals
- #9 Low income (ft)
- #10 Economically disadvantaged (ft)
- #11 Disadvantaged
- #12 Socioeconomic status
- #13 Welfare recipients (ft)
- #14 Social exclusion (ft)
- #15 Poor children (ft)
- #16 Family support (ft)
- #17 Parent support
- #18 Takeup and benefits (ft)
- #19 Educational achievement (ft)
- #20 Academic achievement
- #21 Low attainment
- #22 Improving achievement (ft)
- #23 Improving performance (ft)
- #24 Underachievement
- #25 Academic failure (ft)
- #26 Outcomes of education
- #27 Narrowing the gap
- #28 Educational experience (ft)

Education Resources Information Center (ERIC)

(searched via Dialog Datastar 03/06/10)

ERIC is sponsored by the US Department for Education and is the largest education database in the world. Coverage includes research documents, journal articles, technical reports, programme descriptions and evaluations and curricula material.

Additional needs set

- #1 Boys (ft)
- #2 Sex differences
- #3 Males
- #4 Gender differences
- #5 Working class
- #6 Lower class
- #7 #1 or #2 or #3 or #4 or #5 or #6
- #8 Child poverty (ft)
- #9 Poverty
- #10 Free school meals (ft)
- #11 Low income
- #12 Economically disadvantaged
- #13 Disadvantaged
- #14 Socioeconomic status
- #15 Welfare recipients
- #16 Social exclusion (ft)
- #17 Poor children (ft)
- #18 Family support
- #19 Parent support (ft)
- #20 Takeup and benefits (ft)
- #21 #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20

Educational achievement set

- #22 Educational achievement (ft)
- #23 Academic achievement
- #24 Low achievement
- #25 Improving achievement (ft)
- #26 Improving performance (ft)
- #27 Underachievement
- #28 Academic failure
- #29 Outcomes of education
- #30 Outcomes
- #31 Narrowing the gap (ft)
- #32 Educational experience
- #33 #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32
- #34 #7 and #33
- #35 #21 and #33 not #34

PsycINFO

(searched via Ovid SP 04/06/10)

PsycINFO contains references to the psychological literature, including articles from over 1,300 journals in psychology and related fields, chapters and books, dissertations and technical reports.

Additional needs set

- #1 Boys (ft)
- #2 Human males
- #3 Sex differences
- #4 Working class
- #5 Lower class (ft)
- #6 #1 or #2 or #3 or #4 or #5
- #7 Child poverty
- #8 Poverty
- #9 Free school meals (ft)
- #10 Low income (ft)
- #11 Poor children
- #12 #7 or #8 or #9 or #10 or #11

Educational achievement set

- #13 Academic achievement
- #14 Academic failure
- #15 Low achievement (ft)
- #16 Outcomes of education (ft)
- #17 Narrowing the gap (ft)
- #18 #13 or #14 or #15 or #16 or #17
- #19 #6 and #18
- #20 #12 and #18 not #19

Organisations

A list of key organisations was approved by the Theme Advisory Group. The list, which primarily included the group's specific recommendations, was supplemented by some additional organisations, which had been identified as potentially useful by the NFER librarian during pre-formal searches.

JANUARY 2010

Effective classroom strategies for closing the gap in educational achievement for children and young people living in poverty, including white working-class boys

This research review tells us what works in closing the gap in educational achievement for children and young people living in poverty, including white working-class boys. It is based on a rapid review of the research literature involving systematic searching of literature, and places a focus on the highest-quality evidence of 'what works'. It summarises the best available evidence that will help service providers to improve services and, ultimately, outcomes for children, young people and their families.

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