CLOSING THE ATTAINMENT GAP IN SCOTTISH EDUCATION

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This report outlines what teachers, schools, local and national government and other education providers can do to close the education attainment gap associated with poverty in Scotland.

It looks at attempts that have been made to tackle the issue and considers the evidence for which ones have proved successful. It makes recommendations for educators and policy-makers about what is likely to work. It is the first systematic review of how education policies, frameworks and interventions can be used to make education outcomes in Scotland fairer. It is a timely contribution to helping Scotland achieve the goals of *The Child Poverty Strategy for Scotland* (2014).

The report:
- explores the nature of the educational attainment gap between children from higher and lower-income households in Scotland, and its consequences;
- examines the impact of recent policy and practical interventions that have been made in Scotland;
- summarises evidence about what educators can do to close the educational attainment gap associated with poverty;
- explains why better research, evaluation and attainment evidence is needed;
- lists who needs to do what, at every level of policy and practice, to help children who live in poverty do well at school.

INSPIRING SOCIAL CHANGE

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EXECUTIVE SUMMARY

There is clear evidence of a persistent gap in attainment between pupils from the richest and poorest households in Scotland. This gap starts in preschool years and continues throughout primary and secondary school. In most cases, it widens as pupils progress through the school years. Most importantly, the poverty attainment gap has a direct impact on school-leaver destinations and thus the potential to determine income levels in adulthood.

Current legislation and policies in Scotland promote integrated services, joint working and flexibility, all of which are helpful to pupils from economically deprived homes. Education policies and frameworks give considerable freedom for professionals to make localised decisions, and therefore have the potential to address the achievement gap associated with poverty. However, the policy and implementation advice for education professionals needs to focus attention explicitly on this attainment gap and direct professionals to research-informed knowledge about how it can be narrowed. For some policies (for example, the current policies on formative assessment), there is little research evidence of its impact on the attainment of pupils from economically disadvantaged households, and educators need to be alerted to this.

Projects and interventions that have been implemented in Scotland to raise attainment or to address low achievement associated with poverty need stronger, more focused, and data-driven evaluations to identify those that have been effective so that they may be scaled up and to learn from those that have not been effective. It is hard to find robust evidence about recent and existing projects.

The following interventions have a positive impact on reducing the attainment gap associated with pupils from economically disadvantaged households:

- effective parental involvement programmes that focus on helping parents to use appropriate strategies to support their children's learning at home rather than simply seeking to raise aspirations for their children's education;

- carefully implemented nurture groups and programmes to increase social, emotional and behavioural competencies;

- high-quality, full-day preschool education for children from disadvantaged backgrounds;

- collaborative work in small groups if effective collaboration is thoroughly taught across the school and facilitated by teachers;

- peer-tutoring, metacognitive training and one-to-one tutoring using qualified teachers, trained teaching assistants, or trained volunteers;

- literacy instruction that has a responsive learning mix of decoding, fluency, comprehension, engagement and digital literacy research skills;

- whole-school reforms, particularly those that are informed by research evidence and focus on improving attainment by using effective pedagogies, have a shared strategic plan that encompasses academic, social and emotional learning, are supported by significant staff development and are data-driven, multi-faceted and consistently monitor impact on attainment;

- high-quality, evidence-informed, context-specific, intensive and long-term professional development;

- mentoring schemes that adhere to particular characteristics associated with efficacy;

- academically focused after-school activities such as study support;

- targeted funding that avoids situations where budget increases in one area are undermined by reduced budgets elsewhere.

Evidence can help education professionals understand and address the multiple aspects of disadvantage that affect children's lives. It can help identify the causes of negative effects and sustainable initiatives likely to work, and it can help to direct core resources appropriately. However, in Scotland the quality and quantity of attainment data available for primary and early secondary pupils is highly variable. This limits the ability of professionals to design, monitor and evaluate the curriculum and contributes to a lack of reliable knowledge. Active measures to promote the role of data in directing professional decisions would be required to prevent the high-stakes testing regimes emerging from the use of such data.

National and local projects do not routinely focus on pupils from economically disadvantaged households in project conception, design and evaluation. Nationally the educators of Scotland need to develop policies to better create, collect and share knowledge of:

- interventions that improve the performance of economically disadvantaged groups;

- ways to make curriculum design and planning (at school, class and individual level) more nuanced and effective for economically disadvantaged groups;

- ways to deploy staff and resources to raise achievement in economically disadvantaged groups;

- methods to monitor and evaluate pedagogies, resources and initiatives for impact on economically disadvantaged groups as well as general average attainment.

To be more equitable, Scottish education needs to ensure that key actors (national government; Education Scotland; local authorities and schools; the Scottish Qualifications Agency (SQA); non-government stakeholders such as charities and unions; and universities) share and shape how knowledge about poverty and attainment is used. Poverty and attainment need to become more visible in advice about developing the curriculum, improving schools and raising educational outcomes for all pupils.

Professionals at all levels need to understand how poverty influences attainment, and draw on an evidence base of 'what works, for whom, in which contexts, and why' to enable them to implement change in the most effective way. Focused staff development and a national 'knowledge bank' and mobilisation project would help this.

Key recommendations

National government should:

- make robust attainment data available to all teachers, including those in the primary and lower secondary sectors, so that it can be used by schools for internal curriculum design, intervention and monitoring. This is not an endorsement of high-stakes testing regimes;

- establish a national knowledge bank and mobilisation strategy, underpinned by clear principles of what constitutes robust knowledge to sufficiently inform national, local authority and school-level interventions. This knowledge bank should enable education professionals to attend to different kinds of evidence, consider issues of fidelity and to understand the core characteristics that make a particular intervention successful. It should draw on academic and professional expertise.

Education Scotland should:

- analyse and discuss attainment profiles by deprivation deciles in all school and local authority inspections rather than focusing on general attainment levels. Educators should show inspectors how they draw on this data and on knowledge of what works to inform decisions;

- exemplify how national frameworks and strategies (including Curriculum for Excellence/Building the Curriculum; Journey to Excellence/How Good is Our School; and Getting it Right for Every Child) must be used with robust, research-informed knowledge to reduce the poverty-related attainment gap;

- commission national projects and identify local projects that focus on closing the poverty gap in attainment and that make good use of data in identifying, scoping, designing/planning, implementing, monitoring and evaluating impact.

Local authorities should:

- ensure that improving the educational outcomes for pupils from economically disadvantaged homes is a priority in the local authority and school development plans;

- focus 'support and challenge' discussions on the poverty attainment gap and on nuanced application of robust research-informed knowledge of what might work in a particular school context;

- promote high-quality professional development programmes, conferences, networks, projects and implementation advice for teachers. These should be evidence-driven, promote school-to-school links and be focused on raising attainment to close the poverty gap

School staff should:

- raise their individual and collective awareness and understanding of the achievement gap associated with poverty and knowledge of how it might be addressed;

- monitor and analyse the poverty and attainment links in the school/classroom and consider the implications for curriculum design, planning and teaching (for the school, classes and individual pupils);

- implement research-informed interventions to raise achievement among economically disadvantaged groups in a way that will have a positive impact on individual pupils, the class and the school.

Universities should:

- promote evidence-based knowledge about poverty and what works for pupils from economically disadvantaged homes in their pre-service, award-bearing and non-award-bearing career-long professional learning programmes;

- develop empirical research and evaluation studies that generate knowledge and understanding about how poverty-linked educational inequality operates and can be addressed in Scottish education.

Other stakeholders should:

- raise awareness and understanding of how poverty and educational attainment are linked through political, public and professional engagement;

- consider how the educational outcomes for pupils living in poverty and existing research might inform and shape the projects they fund.

1 NATURE AND PERSISTENCE OF THE ATTAINMENT GAP AND ITS IMPACT ON LATER OUTCOMES

This chapter examines the attainment gap between children from the most and least deprived households and its impact on later outcomes.

Overall:

- There is evidence of an attainment gap in the early years and this gap persists and expands across the years of formal schooling.

- Literacy and numeracy measures continue to show deprivation-related patterns throughout primary school.

- Children from deprived households finish compulsory schooling with significantly lower levels of attainment than their counterparts from more affluent areas.

- The observed gap in attainment is linked to the subsequent destinations of children and young people after school, and has repercussions for future job market success.

In Scotland today, over one in five children lives in poverty. It affects their health, their education, their connection to wider society and their future prospects for work. Although Scottish education does well for many of its children, it does not serve these most vulnerable children well and the gap in educational attainment between pupils from the richest and poorest background is wider than in many similar countries. A report from the Organisation for Economic Co-operation and Development (OECD) into the quality and equity of schooling notes that:

'Little of the variation in student achievement in Scotland is associated with the ways in which schools differ.... Who you are in Scotland is far more important than what school you attend, so far as achievement differences on international tests are concerned. Socio-economic status is the most important difference between individuals.'
OECD, 2007, p. 15

An analysis of data from different tiers of the educational system shows that the attainment gap in Scotland is pervasive, starting from preschool and widening as children move up through the school system.

Attainment gap in the early years

A recent longitudinal study, the *Growing Up in Scotland* survey, identifies the nature of this attainment gap among preschool children in Scotland (Bradshaw, 2011). Data on changes in the cognitive ability of children aged 3 to 5 from different income backgrounds shows that children from high-income households significantly outperform those from low-income households in vocabulary and problem solving at both ages. At age 3 and 5, average vocabulary scores for children from low-income households were significantly below that of children from high-income households (0.77 and 0.73 standard deviations respectively). By age 5, the scores correspond to a 13-month gap in vocabulary development. In problem-solving, the average attainment of children from low-income households was below those of children from high-income households at age 3 and grew by age 5 (0.69 and 0.73 standard deviations respectively). This difference corresponds to a gap of about 10 months in problem-solving ability at age 5 (Bradshaw, 2011). On the whole, while the vocabulary gap narrows slightly from age 3 to 5, it widens on measures on problem-solving. The above data provides evidence that the attainment gap already exists by the age of 3 and begins to widen in certain domains of learning by age 5.

## Attainment gap in primary and secondary school years

The annual Scottish Survey of Literacy and Numeracy (SSLN) is a sample survey that monitors academic attainment at key stages of primary to secondary school. Pupils are assessed at Primary 4, Primary 7 and S2, and the assessment is linked to Curriculum for Excellence (CfE) levels[1] (Scottish Government, 2013a). This gives an overview of the nature of attainment across key stages of education.

The first numeracy survey was undertaken in 2011.[2] Results (Figure 1) indicated that attainment was stratified by deprivation.[3] The attainment gap in numeracy between children from the most and least deprived background was evident at all levels. It starts at P4 and widens by the time children get to S2. At S2, pupils living in areas of low deprivation were more than twice as likely to be assessed as performing well, or very well, than those in areas of high deprivation.

The 2012[4] survey assessed attainment in literacy. Analysis of individual components indicates an attainment gap in literacy associated with deprivation. Figure 2 shows significant attainment gaps in reading at all stages of education (P4, P7 and S2). Overall, there was a 17, 14 and 16 percentage point difference between children from the least and most deprived backgrounds at P4, P7 and S2 stages respectively.

Figure 1: Attainment gap in numeracy based on getting 50% or more of task successfully completed
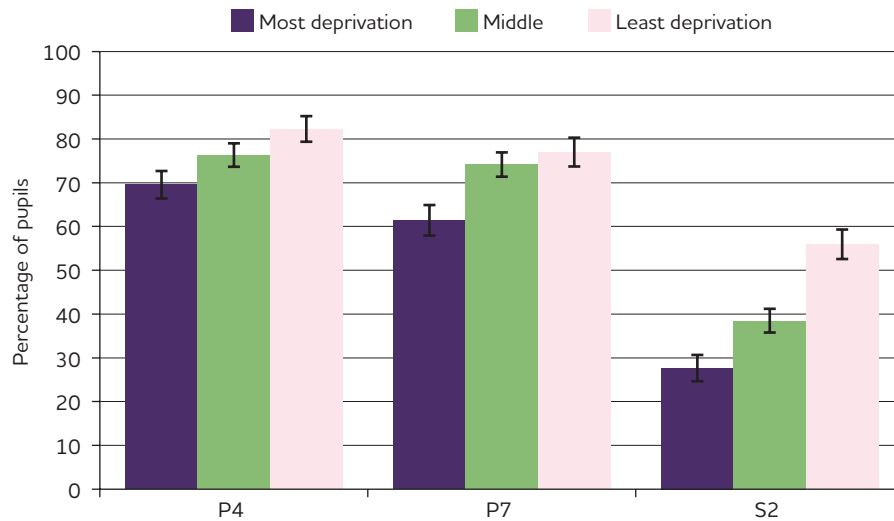
Figure 2: Attainment gap in reading based on getting 50% or more of task successfully completed
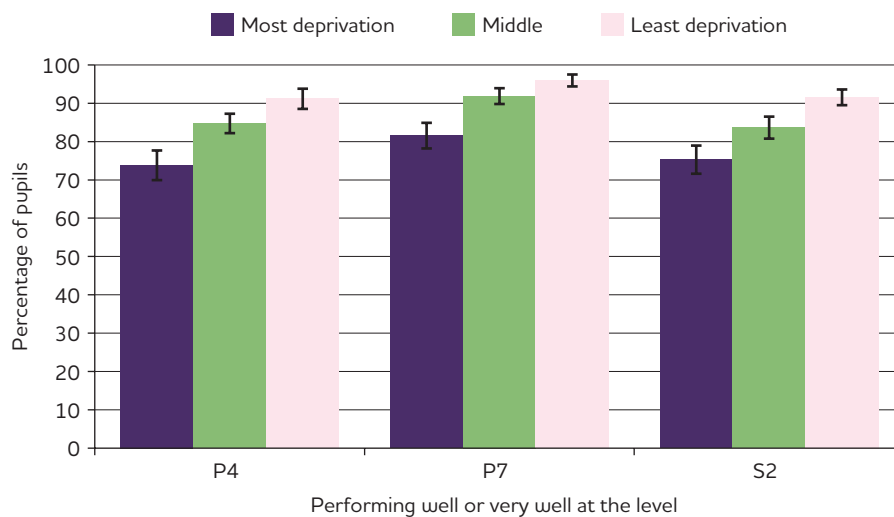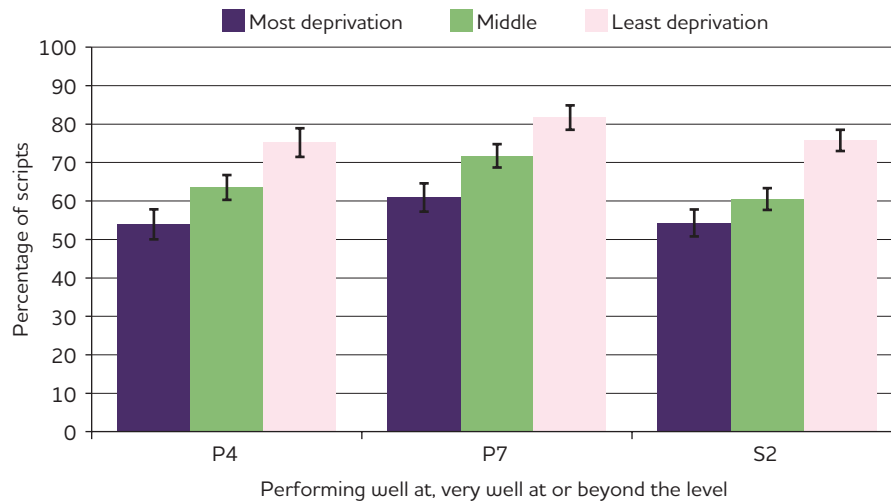

Similar trends were observed in children's performance on writing (Figure 3), although the gaps in attainment were much wider than for reading. On the whole, the average attainment gap between children from the most and least deprived background across the various stages was 21 points.

Attainment gap at the end of compulsory education

A key measure of attainment at S4, the end of compulsory schooling, is the average tariff score.[5] This is an overall measure of attainment of school leavers. Available data from 2007/08 to 2011/12 (Figure 4) shows that over this period the attainment gap has remained unchanged. Even though overall leaver attainment increased slightly for all groups, the gap between children from the most and least deprived background remained the same. There appears to be an average of 300 points difference in attainment between the two groups over the period. This corresponds to about 'four A grades'

Figure 3: Attainment gap in writing based on getting 50% or more of task successfully completed

Legend: Most deprivation | Middle | Least deprivation

Y-axis: Percentage of scripts (0–100)

X-axis categories: P4, P7, S2

Performing well at, very well at or beyond the level

Figure 4: Average tariff scores of school leavers by SIMD (Scottish Index of Multiple Deprivation), 2007/8 to 2011/12

Legend: Most deprived 20% | Least deprived 20%

Y-axis: Score (0–600)

X-axis categories: 2007/08, 2008/09, 2009/10, 2010/11, 2011/12

Year
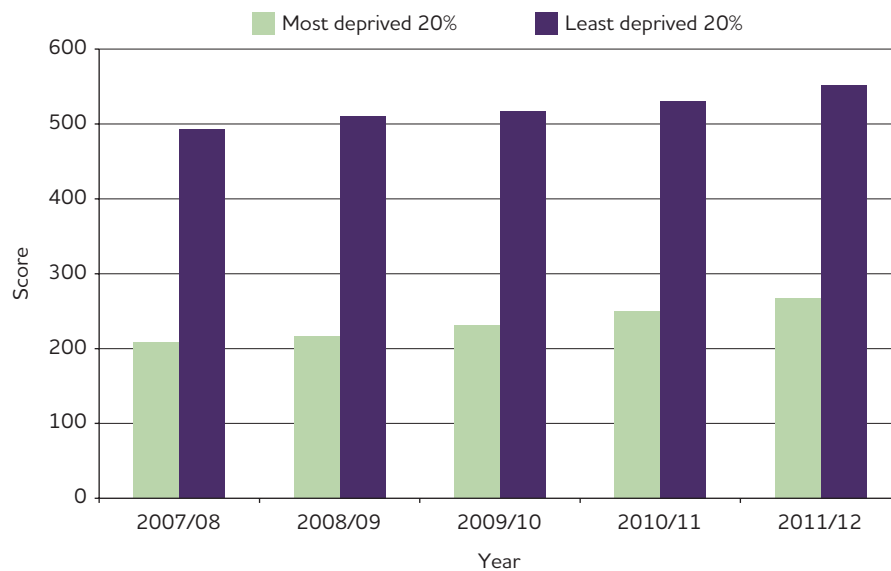
in a Higher level exam or 'three B grades' at Advanced Higher.[6] Higher and Advanced Higher qualifications are taken after the end of compulsory schooling in Scotland and are required for entry into university.

A study by Howieson and Iannelli (2008) found that while a substantial proportion of low attainers continue at school beyond compulsory education (that is, after S4) in Scotland, the majority of those who stay on tend to come from more advantaged backgrounds. These 'stayers' are more likely to obtain a formal qualification by the time they are 22–23 years compared with low attainers who leave early (63% versus 14%).

Comparative attainment gap across OECD countries

The attainment gap between children from most deprived and least deprived households in Scotland is large compared with that of other countries. One international comparator is the Programme for International Student Assessment (PISA) (OECD, 2013)., which focuses on the attainment of

15-year-olds in reading, mathematics and science. An OECD report (2007) commissioned by the Scottish Government indicated that in Scotland parental socioeconomic background (SES) was more important for children's attainment than the school they attended. In response to this, and to the UK 2010 Child Poverty Law, various policy mechanisms have been put in place to close the gap. The 2009[7] PISA study suggests that the association between parental SES and attainment in reading persists and is stronger in Scotland than the OECD, English or Welsh averages (Figure 5).

More detailed analysis suggests that correlation between poverty and educational attainment might even be worse for certain categories of

Figure 5: Strength of relationship between performance in reading and parental economic, social and cultural status in OECD countries[8]

Relationship between performance in reading and parental SES
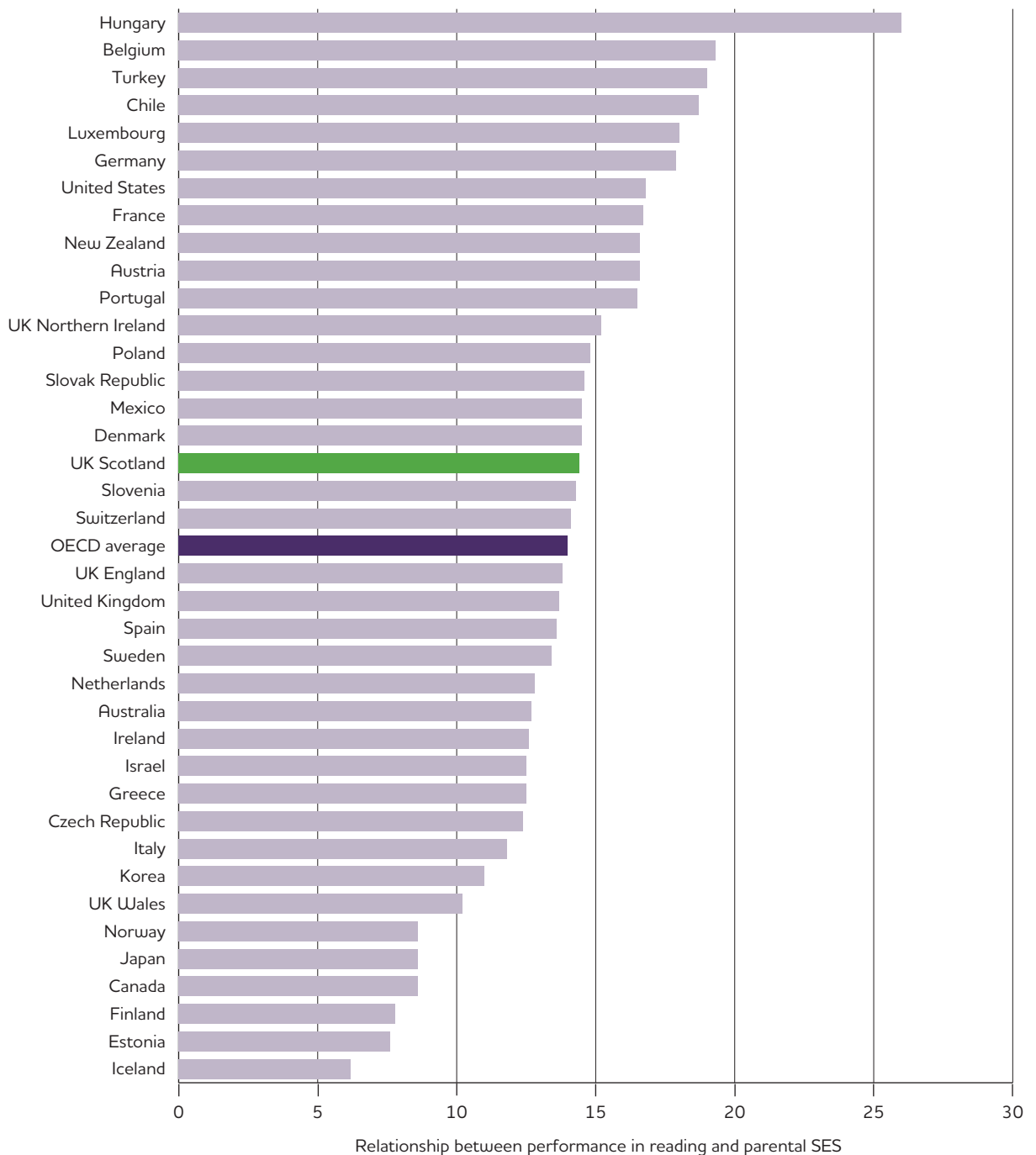
Source data: www.scotland.gov.uk/Publications/2010/12/10141122/15

children in Scotland than in other countries. For instance, Jerrim (2013), using the same 2009 PISA survey, found that the brightest boys from poor homes in Scotland are almost three years behind those from the richest homes in reading. Scotland's attainment gap in reading for boys was the highest in the developed world, comparatively worse than that in emerging economies like Chile, Turkey and Mexico.

Newly released findings from the 2012 PISA survey (Boyling *et al.*, 2013) at the time of finalising this report suggests that the attainment gap in Scotland narrowed slightly compared with that in the 2009 survey. While this is welcome news, the impact of disadvantage on attainment was still substantial. For instance, students who came from households that were just one point above the measure of socioeconomic status were roughly about one year ahead in education. Additionally, a longitudinal trend using other datasets is required in order to be confident that the observed narrowing of the attainment gap is actually taking place. However, the observed changes from the 2012 result should give stakeholders the encouragement that persistent effort is likely to pay off in terms of closing the gap.

Impact of the poverty attainment gap: destinations after leaving school

Educational inequality has repercussions for future labour market success as well as other social, emotional and health outcomes (Parsons and Bynner, 2007). The Scottish Government has set out a National Policy Framework, with five strategic objectives, 16 national outcomes and 50 national indicators covering all aspects of life and provision. The extent to which these are being met is measured through Scotland Performs, which reports on progress against the national indicators. One of the national indicators is to 'increase the proportions of young people in education, training or work', with the indicator measure being the 'proportions of young people in a positive destination 9 months after leaving school' (Scottish Government, 2013b).

The Scottish School Leavers Survey (SLSS) produces information about destinations of young people post compulsory schooling. The survey measures the proportion of school leavers in positive destinations. 'Positive destinations' include higher education, further education, employment, training, voluntary work (since 2006/07) and activity agreements.[9] Data from 1997/98 to 2011/12 (Figure 6) indicates that on the whole, a substantial proportion of school leavers (almost 90%) end up in positive destinations (Scottish Government, 2013c). The percentages of leavers in unemployment have remained fairly consistent since 2001/02, at around 10%.

Examination of school-leaver destination by deprivation shows that, in comparison with school leavers from least deprived families, those from the most deprived background are less likely to end up in positive destination (Figure 7).[10] However, the relative gap between deprivation and destination appears much smaller than that observed between tariff scores. For instance, in 2011, while the average tariff and percentage of positive destination was 552 and 95% respectively for students from the least deprived backgrounds, tariff score and positive destinations were 268 and 82% for those from the most deprived background.

A more detailed analysis of types of destination provides a better indication of how school-leaver destination is stratified by poverty.[11]
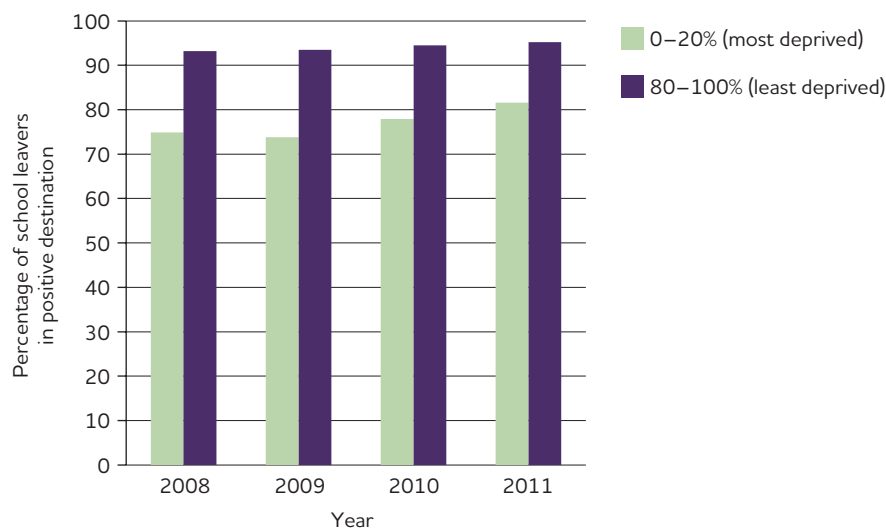
As evident in Figure 8, the majority of students from deprived backgrounds are more likely to end up in destinations other than higher

Figure 6: Pattern of school-leaver destinations in Scotland, 1998-2011
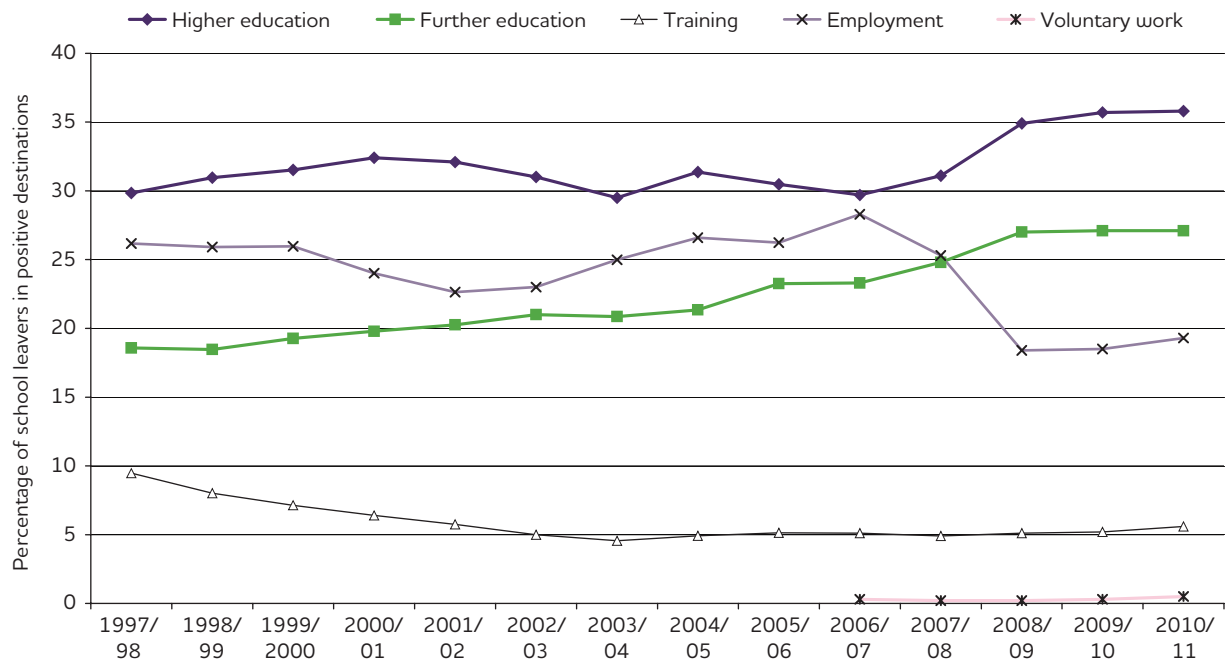
Source: Scottish Government, 2013c

Figure 7: Leaver destination by deprivation

education. Thus, the attainment gap has a significant repercussion for future destinations, with children from the most affluent backgrounds ending up in higher education and those from the most deprived deciles more likely to end up in further education colleges, training or unemployment.

It is important to know that these differences in destination will have a direct influence on future incomes. The benefits of a university degree include increased learning potential and improved financial status. The Browne Report (2010) states that in England, over a lifetime, a university degree typically results in earnings of over £100,000 greater than those of an individual with A levels but no degree. Dearden *et al.* (2008) calculated that the average lifetime earnings difference between graduates and non-graduates (i.e. not restricted to those with A levels) is around £400,000 and could be closer to £600,000, depending on national productivity growth figures. While the figures vary, depending on the background variables taken

Figure 8: Types of leaver destination by deprivation decile
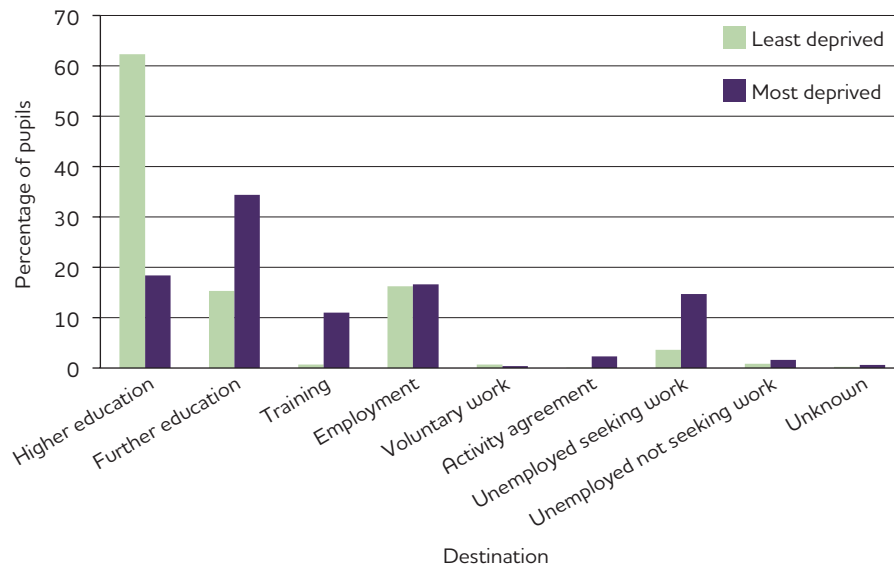
Source data: www.scotland.gov.uk/Publications/2010/03/30180354/0

into account, there is no doubt that, in general, the higher the qualifications obtained, the greater the financial benefits and improved socioeconomic standing.

Several studies have found a direct relationship between educational attainment and future employment, occupational status and earnings (e.g. Bynner *et al.*, 2002; Howieson and Iannelli, 2008). In Scotland, Howieson and Iannelli (2008), using the SSLS, found that educational attainment at the end of compulsory education (S4) significantly predicted several labour market outcomes at the age of 22-23. Low attainers were more likely to be unemployed (12% versus 4%), working part-time (12% versus 6%) and earning less (difference of £23.45 and £44.94 per week for men and women respectively). Additionally, low attainers on average were more likely to be in low-status positions in their jobs. Considering that the majority of low attainers are from disadvantaged households, the findings suggest that the cycle of social inequality will continue if greater attention is not paid to closing the attainment gap. As indicated by Howieson and Iannelli (2008), 'the attainment of disadvantaged young people is [likely to be] of considerable significance to their future life chances – in an unequal world, such apparently objective qualifications may enable them to improve their disadvantaged position' (p. 273).

In summary, there is clear evidence of a persistent attainment gap between pupils from the richest and poorest household in Scotland. This gap starts in preschool years and continues throughout primary and secondary school. In most cases, it widens as pupils progress through the school years. Most importantly, the poverty attainment gap has a direct impact on school-leaver destinations, future labour market success and the potential to determine income levels in adulthood.

2 POLICY AND INTERVENTION RESPONSES TO THE POVERTY ATTAINMENT GAP IN SCOTLAND

This chapter examines some of the policy and intervention responses that Scotland has made to reduce the poverty attainment gap.

The chapter indicates the following:

- Current policies promote integrated services, joint working and flexibility, all of which are helpful to pupils from economically deprived homes.

- Education policies and frameworks have the potential to address the achievement gap associated with poverty. However, implementation advice should indicate how educators use them to address poverty-linked underachievement. For some policies, there is minimal research evidence of effective impact on the attainment of pupils from economically disadvantaged households and professionals need to be alerted to this.

- Projects and interventions that have been implemented in Scotland to address low achievement associated with poverty include:
    - early intervention programmes;
    - Schools of Ambition;
    - 'good practice' advice to schools;
    - literacy engagement projects;
    - widening participation in further and higher education;
    - targeted educational funding strategies.

More robust, focused, data-driven evaluations are necessary to understand which of these projects has been effective and to learn from them.

There is a range of legislation, policies, strategies and frameworks in Scotland designed to create the context for schools and others to address educational underachievement associated with poverty. A few contain specific, focused mechanisms to reduce the correlation between low educational attainment and poverty, but many more are wider initiatives offering broad aims and levers that, if appropriately interpreted and applied, could enable educational establishments to address the impact of poverty on educational attainment. To understand the context of these responses, it is important to note that governance arrangements in Scotland are such that policy frameworks provide guidance for local authorities, schools and teachers rather than prescribed content or programmes of study. Thus, while government makes laws and policies, implementation is down to local authorities and schools. In theory, this should enable programmes to be flexible and tailored to meet the needs of the communities they serve.

Legislation, policies and frameworks

Child Poverty Strategy for Scotland

The Child Poverty Strategy for Scotland (Scottish Government, 2011a) promotes a child-centred, multi-agency approach to tackling economic disadvantage based on the principles of:

- early intervention and prevention so that families do not fall into poverty;

- prioritising the skills, knowledge and views of individuals requiring support;

- promoting the rights of a child to be involved and heard in decisions that affect their lives;

It draws together policies to promote co-operation between the Scottish Government and agencies such as the NHS and local authorities. Sime (2013, p. 863) explains that the strategy is to be achieved through initiatives such as:

- Achieving our Potential: A Framework for Tackling Poverty and Income Inequality in Scotland (Scottish Government, 2008a), which requires local authorities to target anti-poverty strategies in service delivery, including strategies to improve children's life chances.

- The Early Years Framework (Scottish Government, 2008b), which is an outcomes-focused, ten-year plan to re-envisage how support for young children and their families is delivered. It promotes better-quality preschool provision and policies that emphasise the importance of putting children at the centre of service delivery.

- Equally Well (Scottish Government, 2008c), which promotes universal health services as well as early and targeted interventions. Thus the Child Poverty Strategy indirectly aims to close the attainment gap through quality early years provision.

The revised child poverty strategy (Scottish Government, 2014) sees education as a way out of poverty. The proposal is that all the policies and

programmes aimed at tackling child poverty should think about how to close the attainment gap between rich and poor in schools, as a key priority for improving children's life chances. If the revised strategy is to make a difference to the life of children from the most disadvantaged households, then greater commitment and emphasis needs to be placed on using evidence of what works, for whom, and in what context to inform activities aimed at closing the attainment gap.

Children and Young People's Bill

The proposed Children and Young People's Bill (2013)[12] is in 13 parts and covers a wide range of children's policy. It directly prompts local authorities to focus on the early years and highlights the need for interdisciplinary work across agencies to alleviate the impact of poverty on children's life chances. Investment in early years education is seen as a way to reduce the need for interventions that address academic failure in later years and the Bill increases the entitlement of every child to nursery education from 450 hours to 600 hours, although it makes no correspondingly hard-and-fast recommendations about quality of provision, which is also crucial. It takes into account the link between different agencies and programmes that affect children in Scotland, linking, for example, education and childcare together so that they may provide opportunities to alleviate disadvantage and break cycles of deprivation by allowing parents/carers to go out to work.

Parental Involvement Act

The Parental Involvement Act (2006) (Scottish Executive, 2006) gives parents the right to be more involved in their children's learning and makes local authorities responsible for promoting parental involvement in learning at home, in home–school partnerships, and in promoting parental representation in schools. A National Parenting Strategy was also launched in 2012. Currently, very little evaluation exists on how these are being implemented and their impact on children's attainment.

Curriculum for Excellence and Building the Curriculum

Curriculum for Excellence (CfE) (Scottish Executive, 2004) is the national curriculum framework that sets out the aims, principles and approaches that should underpin the educational system for three- to 18-year-olds. The CfE Action Plan 2011-2012 makes reference to 'raising standards and attainment levels through excellence in learning and teaching' (Education Scotland, 2011). The curriculum also offers several important themes that could empower the delivery of education to disadvantaged groups: it makes literacy, numeracy and health and wellbeing the responsibility of all teachers; it promotes flexibility, personalisation and choice; and it challenges schools to develop in their pupils four capacities, one of which is being 'successful learners'.

Evidence from existing reviews suggests that adopting a new curriculum per se does not result in improved outcomes for children living in poverty (Sharples *et al.*, 2011). However, CfE could be powerful force for closing the attainment gap if teachers, schools and local authorities used it to tailor their curricula, classrooms, school systems and pedagogies to meet the educational needs of children from deprived households. Thus, its impact will depend on focused implementation guidance that ensures schools effectively use the leverage it offers in making change happen.

Journey to Excellence

A key mechanism for delivering improvement through the implementation of the new curriculum is Journey to Excellence. This identifies ten dimensions of excellence and provides an improvement guide that reflects 'up-to-date evidence of excellence'. Journey to Excellence links to four strategies designed to lever change in local authorities and schools:

- identification of needs, through Getting it Right for Every Child (GIRFEC);
- formative assessment, through Assessment is for Learning (AifL);
- self-evaluation, based on How Good is Our School (HGIOS);
- enterprise and employability skills, through Determined to Succeed (DtS).

Getting it Right for Every Child

GIRFEC is a national policy designed to ensure that all children and young people receive the help they need to be successful in life, including at school. It encourages collaborative inter-professional approaches to working with children and families and requires teachers to consider the barriers that pedagogies, curriculum design, learning environments or school systems may present to learning for individuals or groups, and to respond to these in dynamic and creative ways. GIRFEC is designed to focus attention on how schools might better meet the needs of all students, including educationally and economically disadvantaged students. Its SHANARRI Well-Being Indicators (Safe, Healthy, Active, Nurtured, Achieving, Respected, Responsible and Included) have encouraged a focus on disadvantaged groups. Local authorities have responded to this, and to the strategy Determined to Succeed (see below), with projects that, for example, improve family partnership working in all sectors and introduce homework clubs and nurture centres into primary schools. GIRFEC also prompts intervention for individual pupils via the staged intervention mechanism. However, this only begins once there are concerns about an individual pupil failing to achieve.

An Education Scotland report (Education Scotland, 2012b) indicates ongoing challenges to inter-agency working in GIRFEC and low awareness among classroom teachers of key requirements. Unless addressed, these will limit the potential for GIRFEC to lever change in Scotland.

Formative assessment: Assessment is for Learning

Scotland's AifL strategy aims to improve educational outcomes for children through formative assessment strategies. International research on similar AfL programmes shows that the approach can have powerful effects on attainment, although this is dependent on the quality of implementation (Higgins *et al.*, 2013). However, we have been unable to find any studies showing how such programmes affect socioeconomically disadvantaged groups. A CERI/OECD (2008) review of evidence on formative assessment concludes: 'There is a need for more refined knowledge of what works for students in different socio-economic or demographic groups' (p. 12). Although AifL has been a major policy focus in Scotland, there have been no evaluations directly measuring its impact on general educational attainment or evaluations of its impact on specific groups. There has been a Scottish evaluation of stakeholder views of its impact, but this did not cite hard evidence of impact on pupil attainment. We simply do not know how AifL has affected the attainment of students from economically disadvantaged backgrounds or whether it impacts differently when these students are a minority group in the class as opposed to the majority. Nevertheless, Scottish policy-makers view AifL as a key plank in delivering social equity through schooling.

How Good is Our School
HGIOS is a self-evaluation framework to help educationalists evaluate a school's impact 'in improving the educational experience [sic] and lives of Scottish pupils through learning and their successes and achievements'. It is a lever for change, used by schools in self-evaluation, and by local authority and Education Scotland inspectors. Currently, poverty is only alluded to indirectly in HGIOS quality indicators and exemplification. For example HGIOS 3, Equality and Fairness, states: 'In our school, culture and language, disability, gender, race, religion, sexual orientation and additional support needs do not become barriers to participation and achievement'. Clearer badging and signposting of equity issues relating to poverty and a focus on how schools are closing the attainment gap would encourage schools to focus on it.

Determined to Succeed
The DtS strategy aimed to improve enterprise and employability skills. It specifically acknowledged the challenges of poverty and the harsh consequences of low school attainment. It required schools to promote learning through a range of work-related contexts and work experience, and to ensure clear progression pathways for young school leavers. While DtS acknowledged the attainment gap, its main focus was not on reducing the gap but on providing young people with employable skills at the end of compulsory education. The final report (Bryan and Granville, 2011), however, highlighted continuing implementation challenges, such as establishing sustained enterprise contexts to foster learners' achievement, and effectiveness of enterprise experience and its impact on pupils' achievement. Direct funding for the implementation of this policy has now ended.

We have been unable to find an evaluation or research study that looks in a systematic and explicit way at how DtS affected different groups of pupils, or that examines its implementation in terms of the affordances, capacities and challenges faced by schools serving different communities. Such knowledge is important because it would enable funding to be more targeted, and generate new knowledge that could be shared to effect efficient implementation.

Early Years Collaborative
The Scottish Government's Early Years Collaborative involves a coalition of Community Planning Partners comprising social services, health, education, police and the third sector. Launched in October 2012, it aims to accelerate and convert principles set out in the Early Years Framework and GIRFEC into practical action. Its ambition is to 'make Scotland the best place in the world to grow up in' through reducing inequality for the most vulnerable children and providing all children with the opportunity to have the best start in life. Key commitments include 85% of children to reach all expected developmental milestones during their 27- to 30-month health review by 2016, and 90% of children to attain all milestones by the start of primary school by 2017. These ambitions, if systematically implemented, monitored and evaluated to ensure that they are achieved, are likely to make significant contributions to closing the attainment gap.

Projects and interventions

Early intervention programmes

Scotland's first early intervention programme (EIP) was launched in 1997 with the aim of raising literacy and numeracy skills of pupils in the first two years of primary school (Fraser *et al.*, 2001). The programme was a direct response to concerns that some children, especially those from disadvantaged backgrounds, did not received the 'right start' to primary school and made poor progress subsequently. Initial evaluation of the EIP concluded that the programme had successfully raised attainment in literacy and numeracy, but had not closed the attainment gap associated with poverty. There was, for example, a significant overall rise in reading attainment during the programme, but the relationship between attainment and free meal entitlement remained in evidence and was of a similar order across the years of implementation. OECD (2007) reported a delay in widening the gap from P4 to P5, which it attributed to IEP. A short-term study of the impact of the EIP on progress in the first year of primary school in one Scottish authority reported considerable variation in attainment levels in literacy and numeracy on entry to primary school (Croxford, 1999).

Schools of Ambition

Schools of Ambition was a £15-million scheme to bring about a step change in ethos and performance of secondary schools in Scotland. It involved 52 schools or school clusters that received £100,000 additional funding per year for a period of three years to implement planned transformational change (Menter *et al.*, 2010). The original intention was to involve 100 schools, but the project was stopped early. Schools in the project also got support from Scottish universities. The schools engaged in a number of initiatives to improve management, leadership, student engagement, curriculum breadth, parental engagement and post-school destinations. The model sought to generate knowledge and then share it via school-to-school networks. The evaluations vary in quality and are not always clear about the specific pay-offs for different groups of pupils in the school (LTS, 2010). Importantly, projects were not specifically labelled as poverty intervention projects, which means that they may not be easily recognised as relevant to those schools that could benefit most.

'Good practice' advice to schools

Education Scotland summarises information on a range of curriculum topics and intervention projects. These generally take the form of 'good practice' guidance and tend to rely on stakeholder impressions rather than hard data on attainment rises. The project reports are written in ways that mean the evidence base is not immediately traceable. There are also advisory groups (e.g. the Excellence Group, for mathematics; the Standing Literacy Commission) and subject-specific action plans (e.g. the National Science and Engineering Action Plan) that attempt to improve uptake and attainment in specific curricular areas. The Scottish Survey of Literacy and Numeracy (SSLN) also issues curriculum advice based on an analysis of pupils' performance on specific test items. All these bodies offer general advice on 'good practice' lesson activities and content rather than advice about how to make an impact on the most disadvantaged pupils, although this is clearly the group that does least well in the tests.

Programmes and school interventions: examples of reading engagement

Agencies such as the Scottish Book Trust, Education Scotland and local authorities have promoted a raft of projects to increase reading engagement. The Bookbug programme provides free books for all children and their families from birth to 4 years and the Book-bags programme promotes free-play at home around storybooks for nursery and infant children. Interventions for older children include Scotland Reads; literature circles (Allan *et al.*, 2005; Pearson, 2010); Book Week Scotland; and Booklists projects. It is likely that some of these projects are successful with some groups, but we could find no evaluations of their long-term impact, and no direct evidence of impact on attainment or engagement. Most appear to target the 'general population' and without data it is difficult to assess which projects are worth 'scaling up' and which have the most impact on low-literacy and economically disadvantaged children, or to learn lessons for future project design.

Some primary schools use commercial computer-based library reading programmes and non-computerised local authority programmes to increase the quantity of reading in levels P4-P7. However, there is no published evidence of the impact of these technocratic solutions on either general reading attainment or on disadvantaged students in Scotland. The programmes are not designed to promote reader choice (important in creating an identity as a reader), or to capitalise on the social spaces and networks that create engaged readers.

Widening participation in further and higher education

At the other end of the age spectrum, the Scottish Funding Council for Further and Higher Education set up four regional forums to increase participation in further and higher education from population groups who were under-represented. There are also a number of outreach projects where universities and other organisations work with schools with traditionally low numbers of pupils progressing to higher and further education (e.g. On-Track, Aspire North). Further, the Scottish Government has widening access agreements with higher education institutions as part of their funding settlement, and has maintained free tuition for higher education. These initiatives are likely to have contributed to recent increases in the number of students from low-income households entering further and higher education (Scottish Funding Council, 2013), although it is difficult to make direct causal attributions. There is still a huge gap in entry to higher education. Destinations are still highly stratified by poverty and some widening access programmes only target students from low-income households who have a high likelihood of attaining the required grades to go to university. These latter programmes do not help the vast majority of children and young people from disadvantaged households. This is because they are likely to have low levels of educational attainment and not be on target to achieve the grades required for university.

Targeted educational funding strategies

Local authorities receive education budgets from the Scottish Government based on a common formula across Scotland, and these are not ring-fenced. This means that, in theory, local authorities can decide how to allocate their budget for education, but in practice there is limited room to manoeuvre. Approximately 95% of the budget allocation is based on various population measures and just 5% is distributed on the basis of social deprivation levels. About 70% of local authority spends are fixed costs for salaries and

a further 10% fixed costs for property. The remaining 20% must cover all other costs, including those for initiatives associated with poverty (personal communication with selected local authorities). The local authorities must manage a diminishing resource, which is predicted to be further reduced in 2014-16. Within the current budgetary allocations, there is limited funding directly aimed at closing the poverty attainment gap. A study commissioned by Save the Children (Sefton, 2009) examining the education funding formula in Scotland found that although there was some deprivation weighting in allocations to local authorities, there was no clear link between deprivation and per-pupil expenditure. Huge variations were found across local authorities. A specialist report to describe the impact of funding arrangements is needed to understand how funding policies might efficiently and effectively focus attention on the educational attainment gap associated with poverty.

Commissioned reports and policy groups

A number of reports have recently been commissioned by the Scottish Government to look at how best to close the attainment gap. For example, Pirrie and Hocking (2012), working for Scotland's Commissioner for Children and Young People, examined some strategies for closing the attainment gap between richer and less advantaged children. We are aware that the Scottish Government has set up an Improving Performance to Raise Attainment policy group to examine ways of closing the attainment gap. The group is currently taking evidence from various organisations and academics with the aim to making recommendations for action to the Cabinet Secretary for Education and Lifelong Learning. More recently, there have been published reports on raising attainment that make reference to poverty (for example, ADES, 2012; CSR, 2013).

Conclusion

There is a range of legislation, policies, interventions and commissioned reports in Scotland that has sought to address issues of disadvantage and educational attainment. These initiatives have the potential to prompt schools and others to address the educational disparities that arise from economic disadvantage. However, the majority of these strategies have not directly targeted closing the educational-attainment gap, although there are signs that this is becoming part of the policy agenda. Judging from the available data in outlined in the first part of this chapter, it can be concluded that there has been insufficient impact from previous initiatives on the attainment of children from deprived households. On the whole, most interventions have not been robustly evaluated to determine their impact on attainment, so we do not know which are worth continuing or scaling up. Evaluations are usually carried out after interventions have been completed or designed when projects are at an advanced stage, calling into question the validity and reliability of outcomes. Where evaluations have taken place, there is generally no focus on measuring impacts on educational attainment even with projects that have explicit aims of improving attainment for children from deprived households. These limitations need to be addressed if educationalists in Scotland want to work in a systematic way towards closing the attainment gap.

3 EFFECTIVE STRATEGIES FOR CLOSING THE ACHIEVEMENT GAP: SYNTHESIS OF EXISTING EVIDENCE

This chapter summarises existing evidence from both Joseph Rowntree Foundation (JRF) studies and the wider literature about the most effective actions that schools and other stakeholders in Scotland can take to reduce the gap in attainment between richer and less advantaged pupils. In summarising the evidence, we focused on identifying key elements that make particular approaches successful (see Appendix for methodology). The aim is to provide guidance about the most appropriate ways of carrying out particular interventions in efforts to close the gap.

The chapter indicates that the following interventions have a positive impact on reducing the attainment gap associated with pupils from economically disadvantaged households:

- parental involvement programmes that focus on helping parents to use appropriate strategies to support their children's learning at home rather than seeking to raise aspirations for their children's education;

- nurture groups and programmes to increase social, emotional and behavioural competencies if carefully implemented;

- high-quality, full-day preschool education;

- collaborative work in small groups, but only if effective collaboration is thoroughly taught across the school and facilitated by teachers;

- peer-tutoring, metacognitive training and one-to-one tutoring using qualified teachers, trained teaching assistants, or trained volunteers;

- literacy instruction that has a meaningful and responsive learning mix of decoding, fluency, comprehension, engagement and digital literacy research skills;

- whole-school reforms that are informed by research evidence; focus on improving attainment; use effective pedagogies, significant staff development and a shared strategic plan for academic, social and emotional learning; and are data-driven, multi-faceted and consistently monitor impact on attainment;

- professional development that is high quality, evidence-informed, context-specific, intensive and long-term;

- effective mentoring;

- academically focused after-school activities such as study support;

- targeted funding that avoids providing an increased budget in one area that is undermined by a reduced budget elsewhere.

We found that formative assessment strategies may raise general attainment, but there is no evidence about impact on children from low-income households

JRF research on attitude, aspirations and behaviour interventions

UK policies and interventions in the past decade have frequently focused on changing parental and pupil attitudes to education, raising aspirations and promoting positive behaviour. The Joseph Rowntree Foundation commissioned a series of studies examining the impact of these interventions on the educational attainment of children from low-income households. The findings from these and other related studies provide insights about strategies for reducing the attainment gap in Scotland.

Parental involvement, expectations and parenting styles

Parental involvement
Parenting variables have been the focus of much intervention in the UK (Goodman and Gregg, 2010). Key areas include parental involvement, aspirations and expectations, and parenting style. Recent evidence from JRF studies (Gregg and Washbrook, 2009; Chowdry *et al.*, 2010; Cummings *et al.*, 2012; Gorard *et al.*, 2012) suggests that only parental involvement makes a significant contribution to closing the attainment gap. However, there are questions around the type of parental involvement that results in increased academic attainment for children from low-income families, and how best to involve parents. According to Gorard *et al* (2012), most studies

lack clarity on the definition of parental involvement, making findings difficult to compare. Research based on the UK's Millennium Cohort Study (Hartas, 2011) indicates that socioeconomic differences emerge not in the amount of home support children get for their education, but in the quality of that support. More work is needed to identify the key ingredients of a successful involvement programme.

On the whole, effective parental involvement programmes that have an impact on the attainment gap are those that focus on helping parents to use appropriate strategies to support their children's learning at home. Despite parents from disadvantaged households being as likely to help with their children's learning as economically advantaged parents, their efforts are less effective, especially where parental educational attainment is low. Successful parental involvement programmes include providing parents with effective strategies to tutor their children, making a good space for homework, and providing enjoyable books (Senechal and Young, 2008; Scott *et al.*, 2010; van Steensel *et al.*, 2011; Gorard *et al.*, 2012). These approaches are effective when they use qualified professionals to work with parents, are of longer duration and are group-based (Scott *et al.*, 2010; van Steensel *et al.*, 2011). Parental involvement is strengthened when combined with approaches for raising parental expectations and positive parenting (Scott *et al.*, 2010; Gorard *et al.*, 2012).

An example of a successful parental involvement programme in the UK is the SPOKES project (Scott *et al.*, 2010). This combined parenting interventions to reduce problem behaviour and training for parents to use the strategy of Pause, Prompt, Praise to support their children's literacy development. Findings showed that compared with control groups, the reading attainment of those involved in the intervention increased by more than six months. The intervention was particularly effective for children from disadvantaged backgrounds, thereby reducing the attainment gap.

A crucial issue with parental involvement initiatives is high levels of drop-out. This is attributed to the intensity of demand that the programmes make on parents. Coping with poverty introduces stresses and strains that leave parents with little emotional, physical and mental energy to spare (Hartas, 2011). Levering change through parental involvement in Scotland, therefore, would require schools and local authorities to think carefully not just about how they involve parents in the work of the school, but also about the demands and assumptions they make about their involvement.

Where programmes are highly structured, and provide parents with structured materials and high levels of support, retention rates are high (Cummings *et al.*, 2012). Approaches such as simply keeping contact with parents, and engaging them in routine activities such as attendance at school meetings or volunteering in school, have little impact on closing the attainment gap (Driessen *et al.*, 2005). In the context of Scotland, the Scottish Schools (Parental Involvement) Act 2006 and the National Parenting Strategy (2012) require schools to work with parents to improve attainment for children. There have been national initiatives to encourage parents to read to their children by providing books through the Bookbug initiative and government-funded national reading engagement projects but little is known about how these affect the attainment of children from the most economically deprived households. There are also ongoing parental involvement programmes in Scotland that hold promise but require further investigation. An example is Save the Children's Family and Schools Together programme, which focuses on building a stronger relationship between parents and teachers, and coaching parents on how to work effectively with their children. Existing international evidence provides Scottish

educationalists with clues about the 'active ingredients' to build into parental involvement projects to make a difference to the attainment of children from low-income households. However, evidence from Scottish implementation contexts is still required to understand how best to achieve success in Scotland.

Parental aspiration and parenting style
There was insufficient evidence that raising parental expectations or changing parenting style helps close the attainment gap (Cummings *et al.,* 2012; Gorard *et al.,* 2012). Research consistently finds that the majority of parents from low-income backgrounds have high aspirations for their children's education (Cummings *et al.,* 2011). The main issue is that parents from low-income households do not have the social or economic capital or the know-how to achieve these goals (Kirk *et al.,* 2011). Thus, policies should be aimed at supporting parents to keep aspirations on track and in bringing their dreams to fruition (Cummings *et al.,* 2012; Gorard *et al.,* 2012). The above findings do not mean that parental aspirations or parenting style are not important. Rather, they indicate that these elements should not be pursued in isolation but as part of wider interventions aimed at fostering parental involvement (Gorard *et al.,* 2012).

Children: aspirations, attitudes, and social, emotional and behavioural learning

Attitude and aspirations
Existing JRF studies (Cumming *et al.,* 2012; Gorard*et al.,* 2012) suggest that there is very little evidence that changing attitudes or raising the attainment aspirations of children from economically disadvantaged households has a positive impact on the attainment gap. This is despite numerous programmes being devoted to increasing aspirations, particularly within a UK-wide context. We could find no published evidence about the impact of such initiatives on the attainment of children from low-income households in Scotland. Judging from the available evidence (Cumming *et al.,* 2012; Gorard *et al.,* 2012), it might be concluded that such initiatives on their own are unlikely to make a difference to closing the attainment gap. They should, therefore, be undertaken as part of other approaches for which there is an evidence-base, such as metacognitive training, mentoring or whole school reform (discussed later in this chapter).

Social, emotional and behavioural learning
Children from disadvantaged backgrounds are more likely to be identified with social, emotional and behavioural (SEB) issues. Issues associated with SEB have been given more importance on the political agenda, manifested in a number of policy initiatives aimed at promoting positive SEB learning in children and young people (Challen *et al.,* 2009). Evidence from JRF's research and other existing studies suggests that, if carefully implemented, improving SEB competencies could play an important role in closing the attainment gap (Scott *et al.,* 2010; Sharples *et al.,* 2011; Gorard *et al.,* 2012; Higgins *et al.,* 2013). Successful programmes are those that integrate SEB learning into a general strategy aimed at increasing educational attainment for children from low-income backgrounds, rather than solely for improving SEB learning. The SPOKES project discussed earlier is one such successful initiative (Scott *et al.,* 2010) The evidence indicates that SEB initiatives in Scotland should be directly linked to increasing attainment followed by close monitoring to see if they are making a difference to the attainment gap. Many Scottish local authorities have established 'nurture groups' in schools

to link SEB with academic attainment. An evaluation of the impact of nurture groups for Glasgow City Council (2006) indicate that they show promise. However, their impact on attainment needs to be robustly evaluated.

Early years/preschool education

The achievement gap in children's cognitive development begins at preschool age (Feinstein, 2003; Bradshaw, 2011). Existing research suggests that provision of early, high-quality, full-day preschool education for children from disadvantaged backgrounds can reduce the attainment gap (Sammons *et al.*, 2007; Schroeder, 2007; Springate *et al.*, 2008; Sharples *et al.*, 2011; Tucker-Drob, 2012). Tucker-Drob's (2012) 'twin study' showed that environmental influences such as poverty on children's academic attainment are much stronger for children who do not attend preschool. Additionally, he found that preschool attendance resulted in significantly greater impact on attainment in maths and literacy at age 5 for children from low-income households than for their peers from wealthier families (Tucker-Drob, 2012). Children from economically disadvantaged backgrounds benefited more from attendance at preschool, which consequently narrowed the attainment gap.

Studies comparing attendance at half-day and full-day preschool suggest that full-day preschool results in significantly higher test scores in literacy and numeracy for children from low-income families (Schroeder, 2007). However, the quality of the preschool experience is more important for children from low-income households than children from other households. The effect of full-day preschool may not last if the quality is low (Springate *et al.*, 2008). Findings from the longitudinal Effective Pre-School and Primary Education project indicate that high-quality preschool is essential for children from disadvantaged households in closing the attainment gap (Sammons *et al.*, 2007). Disadvantaged children who attended high-quality preschools showed better attainment five years later, and the quality of preschool served as a protective buffer against attending a less effective primary school. For these children, attending low-quality preschool did not offer any long-term benefits in terms of improved attainments in mathematics and reading, compared with children who did not attend preschool. High-quality preschools have positive relationships between staff and children, clear learning objectives, an explicit focus on language, pre-reading, early number concepts and non-verbal reasoning, and well-qualified staff (Sylva *et al.*, 2004; Sharples *et al.*, 2011). Children from low-income households benefit from opportunities to attend preschools where there is a greater mix of children from differing socioeconomic backgrounds (Ringmose, 2012; Sylva *et al.*, 2004).

An important consideration for closing the attainment gap in Scotland is making preschool provision available at a much earlier age for children from deprived backgrounds than currently exists. While the Scottish Government provides opportunity for children who are looked after to attend preschool from the age of 2, those from the poorest households do not have similar opportunities and can only start from age 3. To reduce the attainment gap, the Scottish Government should consider making preschool opportunities available from age 2 to children from the most disadvantaged households. The commitment from the Scottish Government to increase the preschool entitlement of all children is a welcome contribution to reducing the attainment gap. However, a recent review on early years education commissioned by the Scottish Government (Stephen, 2006) points to a lack of evidence for the efficacy of a range of initiatives introduced to increase

the impact of early years education. Because the quality of early years matters, ensuring that quality provision is available irrespective of geographic location of preschools is paramount in reducing the attainment gap.

Effective pedagogies

The role of teachers and early years staff, and their pedagogy, is fundamental to narrowing the attainment gap. In this section, we examine pedagogical approaches that have consistently been shown to reduce the attainment gap. Almost all the pedagogies reviewed were focused on closing the gap in aspects of literacy and numeracy. However, we have provided a separate section on literacy because literacy is often a gateway providing access to the rest of curriculum (Coghlan *et al.*, 2009). Our list of pedagogies is not meant to be exhaustive and we recognise that there may be other useful approaches. We were guided by the key emphases in the Scottish curriculum and focused on those approaches that teacher sand early years practitioners could employ fruitfully within this curriculum framework to make a difference to the attainment of children from low-income households.

Structured group work/cooperative learning

Available evidence shows that involving children working with each other in small groups helps to close the attainment gap (Georges, 2009; Sharples *et al.*, 2011; Higgins *et al.*, 2013). However, effective collaboration has to be thoroughly taught across the school and facilitated by teachers. Simply putting children together in groups to work will not result in effective learning for children from disadvantaged backgrounds. Effective approaches are those where pupils are provided with support in how to work in groups, where tasks are carefully designed by teachers to foster effective group discussion, where teacher instruction is clear and focused on the learning to be undertaken, and where lower-achieving students are encouraged to talk and articulate their thinking to develop reasoning and problem-solving skills (Foorman *et al.*, 2006; Mercer and Hodgkinson, 2008). On the whole, mixed ability groups result in positive impact in closing the attainment gap, while ability grouping has a detrimental effect on the learning of children from economically disadvantaged household (Higgins *et al.*, 2013). For the above, teachers need training and coaching in the use of well-structured group work approaches (Sharples *et al.*, 2011).

Group working is common in Scottish schools but requires careful teacher attention to structuring and facilitation, drawing on evidence of effective group strategies (Donaldson, 2007; Howe *et al.*, 2007; Christie *et al.*, 2009; Tolmie *et al.*, 2010). It is also the case that schools continue to use attainment grouping despite substantial evidence of the detrimental effect of this on the attainment of children from disadvantaged backgrounds. Universities, local authorities and Education Scotland can facilitate training in effective group work strategies for teachers. This should not be in the form of one-off seminars but an intensive professional development programme that is reviewed, monitored and evaluated to ascertain impact.

Peer-tutoring

Closely linked to group work is the evidence that peer-tutoring provides positive benefits to children from low-income households and helps close the attainment gap (Sharples *et al.*, 2011; Topping *et al.*, 2011; Tymms *et al.*, 2011; Higgins *et al.*, 2013). Approaches include the Peer-Assisted Learning Strategy (PALS), cross-age tutoring and reciprocal peer-tutoring. Both

PALS and cross-age tutoring have been investigated in Scotland and found to have positive impacts on attainments in literacy and numeracy (Topping *et al.*, 2011;Tymms *et al.*, 2011). Key elements of successful peer tutoring include provision of training for tutors on effective tutoring, active teacher involvement in organising tutoring groups, regular monitoring and support for tutors, and effective structuring of activities. Topping and colleagues (2011) described the Dualog strategy used in Scotland. This involves eight steps to ensure effective tutoring. It is also important that tutoring sessions are of short duration, short term and used to complement rather than replace teacher support. The success of this approach in Scottish trials means that there is clear leverage for developing this further within Scottish schools in attempts to close the attainment gap.

Formative assessment and feedback

Existing reviews on assessment suggests that effective feedback from teachers or peers can have a significant effect on educational attainment (Kingston and Nash, 2011; Higgins *et al.*, 2013). Inappropriate feedback, on the other hand, can have negative impacts on the attainment of children from economically disadvantaged homes. Kingston and Nash's (2011) systematic review showed that effective assessment results in an additional 6% to 12% of all students moving into a proficient category. Increases in attainment were observed irrespective of the content area. However, Kingston and Nash pointed to the absence of detail on the types of feedback that work. Higgins and colleagues (2013) identified the characteristics of effective feedbacks as those that are specific, accurate and clear; provide a learner with comparative information on both successful and unsuccessful work; provide opportunity for students to set clear and challenging targets; and give guidance to students on how to improve their work.

There has been a major increase in the use of AifL in Scotland. The rationale is that formative assessment can prompt pupils to take responsibility for their own learning and prompt teachers to identify the factors underpinning achievement and adapt the curriculum accordingly. AifL locates responsibility for learning with the pupils (individually and collectively) rather than solely with the teacher. It requires pupils to have good collaborative skills and work habits, which can take a long time to establish. It is demanding of, and thus has the capacity to develop but also to be hindered by, pupils' general academic capacities, their attitudes and habits towards schooling, and their social and communication skills.

In Scotland, the classroom strategies that most commonly encapsulate and carry the policy aims of AifL into practice (for example, negotiating learning intentions and success criteria, formative feedback and self- and peer assessment) do not, on first examination, necessarily direct teachers to explore understanding in ways that focus on identifying and addressing underpinning factors in achievement.

There has been no systematic national evaluation of how AifL is operating in Scottish classrooms, or its impact on attainment. To be confident that AifL could deliver on Scotland's equity agenda, policy-makers need such evidence, and they need specific information about the impact of the underpinning principles and practices on attainment in children from disadvantaged households.

Metacognitive and self-regulation strategies

This relates to teaching children from low-income households to understand and improve their own learning. Evidence suggests that metacognitive training is effective in improving the attainment of children from low-

income households (Campbell and Brigman, 2005; Higgins *et al.*, 2013). One successful example is the Student Success Skills Model, which was delivered for eight months (one session per month) through structured group counselling (Campbell and Brigman, 2005). It was focused on helping students develop competences in three skill areas, that is academic, social and self-management. Each group session was characterised by setting goals, discussion of goals with peers, goal implementation, and progress-monitoring through a review of how goals were achieved in preceding sessions. The cyclic approach provided opportunities for evaluating small steps and supporting students with specific strategies for overcoming barriers to achieving these goals. Findings were that those receiving this programme showed significantly improved attainment in both maths and reading compared with control students. Effective metacognitive strategies are those that are well structured and accompanied by intensive professional development and support for teachers. They focus on explicitly teaching students how to plan, monitor and evaluate their own learning, and provide opportunities for them to try these strategies out. Additionally, they tend to be group-based and specifically focused on raising attainment of children from poor backgrounds.

One-to-one tutoring

Existing reviews of one-to-one tutoring suggests that using either qualified teachers, trained teaching assistants, or trained volunteers has a positive impact on reducing the gap in attainment (Sharples *et al.*, 2011; Higgins *et al.*, 2013). One of the issues raised with this approach is the significant cost involved in providing such opportunity through teachers or teaching assistants. This cost could be reduced if volunteers were recruited and provided with the necessary training required to facilitate effective one-to-one tutoring.

In Scotland, local authorities employ teachers whose remit is 'support for learning' and who work with a range of pupils who need support. However, we have been unable to find an evaluation of the impact of their efforts, and do not know whether they help close the attainment gap associated with poverty.

Closing the attainment gap in literacy

Low levels of literacy impede young peoples' access to the curriculum. This section identifies curriculum design and teaching practices that research indicates can close the literacy-attainment gap for children from low socioeconomic backgrounds.

Time allocation, programmes and focus of instruction

Studies of 'outlier' schools that consistently narrow the attainment gap associated with economic disadvantage (Taylor *et al.*, 2002; Louden *et al.*, 2005), indicate that the teachers prioritise literacy, make literacy enjoyable, and contextualise tasks to make them purposeful and relevant to pupils' out-of-school lives. Highly effective early years literacy teachers engage in similar activities to their less effective colleagues, but weave their teaching more effectively through these activities, getting instructional density by seizing the moment to make teaching points, assessing understanding 'on the hoof' and providing explanations and repeat experiences as necessary (Louden *et al.*, 2005). This validates Scotland's focus on developing high-quality, knowledgeable and reflective teachers (Donaldson, 2010).

Decoding and fluency

There are strong correlations between low socioeconomic status and low letter and vocabulary knowledge on starting school, and also between letter knowledge at the start of school and later reading attainment (Denton and West, 2002). The arguments around phonics and teaching pupils to decode print have been fierce and often unhelpfully reductionist. Obviously, teaching alphabetic knowledge, and how to hear, to sequence, to isolate, blend and segment the sounds in words is important. However, large-scale longitudinal studies in the US show that mastering phonics alone does not improve the reading attainment of those children from low socioeconomic groups and that fluency is equally important (Denton and West, 2002).

In a cross-national study that included Scotland, Thompson and colleagues (2008) found that classes that focused heavily on phonics had less instructional time available to practice reading continuous text and that over-prioritising phonics, or atomistic elements of reading, may not be the best way to promote literacy in disadvantaged groups. Nonetheless, the Clackmannanshire phonics study (Johnston and Watson, 2005) made headline-grabbing claims for phonics and has had a significant impact on Scottish practice through media publicity, local authority networks and commercial teaching materials, despite obvious evidence that the claims do not match reality (Ellis and Moss, 2013). Research does indicate that children starting school with low letter and vocabulary knowledge (associated with socioeconomically disadvantaged groups) benefit from small-group, teacher-led, explicit literacy teaching at the start of their school career, with more open-ended literacy activities as the year progresses (Connor *et al.*, 2004, 2007).

Comprehension

PISA 2009 (OECD 2010; Scottish Government 2010) indicates that poor comprehension correlates with economic deprivation. Research (Kamil *et al.*, 2008) stresses:

- teaching multiple comprehension strategies together (good evidence for summarising the main ideas of paragraphs and whole texts; posing questions; paraphrasing; inferring from text information and prior knowledge; using graphic organisers; and thinking about the types of questions they will be asked to answer) and emerging evidence for visualising;

- identifying metacognitive strategies (e.g. activating background knowledge; identifying reading purpose, author intent and elements of text structure), and using protocols for interrogating texts (e.g. generating literal, inferential and evaluative questions);

- teaching vocabulary through direct instruction in word meanings and strategies that promote independent vocabulary acquisition such as analysing context clues and word roots.

Quasi-experimental research indicates that single-strategy training (for example, posing questions) has no impact, but that multi-strategy and explicit discussion of strategies in open-ended, content-based tasks increase both text comprehension and curricular attainment in disadvantaged groups (Pearson and Hiebert, 2010). Open-ended discussion makes clear the unwritten (and discipline-specific) rules that govern texts in each subject area, and connects subject-specific content to familiar experiences and to existing knowledge (McKeown *et al.*, 2009). The implications for Scotland are

that the current policy focus on literacy across learning (a central tenet of Curriculum for Excellence) could be an important lever for social justice if it goes beyond a 'basic skills' approach.

Substantive content knowledge helps comprehension. Some experimental studies have shown that equalising the background knowledge that poor and excellent comprehenders bring to the task is all that is required to raise literacy attainment (Wallach *et al.*, 2009). This would imply that a highly engaging, knowledge-rich curriculum in both primary and secondary schools could improve reading comprehension and close the attainment gap.

Engagement

The 2009 PISA survey (OECD, 2010) shows that increasing reading engagement could mitigate 30% of the attainment gap associated with socio-economic disadvantage. Early and positive reading engagement also has long-term effects on young children's language acquisition and literacy development (Raikes *et al.*, 2006). Research emphasises the need to create a coherent and appropriate 'literacy learning mix' to promote engagement rather than sticking to single programmes.

In the UK, children from socioeconomically disadvantaged groups tend to have fewer books in the home and are less likely to be read to by their parents, although parents do teach them the alphabet. By age 10, pupils living in poverty are significantly less likely than their economically advantaged peers to report reading for enjoyment in their own time (Parsons and Bynner, 2007). Studies suggest that reading engagement begins to fall around Primary 4/5, declining most strongly in struggling readers (Kamil *et al.*, 2008).

International randomised controlled trials show the effectiveness (and the cost-effectiveness) of holiday reading schemes only when pupils choose their own books (Allington *et al.*, 2010). Some Scottish local authorities fund holiday reading initiatives, but the focus and impact are unclear. The Scottish Book Trust distributes books and runs engagement projects, but does not target socioeconomic groups or collect data on participation or impact. Research in England indicates that teachers' book knowledge is often out of date (Cremin *et al.*, 2008), which is likely to also be true in Scotland, particularly since efficiency savings have reduced the number of librarians with expertise in nursery/primary books.

Digital literacy

In today's world, digital literacy is important. Young people who struggle to read and write risk social isolation. Unable to email, text, google, or use Facebook, Twitter and other social networking tools, they struggle to maintain and organise their social lives or participate in civic society (Leu *et al.*, 2013). Efforts to close the attainment gap need to recognise the importance of these social uses of literacy, but also that academic digital skills (for example, determining 'key word' search terms, selecting appropriate web pages, assessing web-page reliability, and comprehending and summarising content) determine employability. There is evidence (Leu *et al.*, 2013) that schools servicing poor populations tend to set few homework tasks requiring computers and that providing computer equipment and opportunities to use new technology in school quickly equalises skill levels with pupils in more economically advantaged areas. Attending to digital literacy skills is important for equity because schools must ensure that those likely to find it most difficult to access the jobs market have sufficient opportunities to develop and apply such key skills.

Whole-school approaches/reforms

Whole-school approaches that incorporate elements of effective pedagogy, leadership, and quality professional development to teachers provide the best strategy for closing the attainment gap (Balfanz and Byrnes, 2006; Beecher, 2008; Sharples *et al.*, 2011). Whole-school reforms need to tackle the complex factors that result in the attainment gap. Copyrighted approaches such as Success for All in literacy or tailor-made reforms such as the London Challenge both work. Successful approaches are informed by research evidence, focus on improving attainment, use effective pedagogies, have a shared strategic plan that encompasses academic, social and emotional learning, and are supported by significant staff development. Additionally, these approaches are data-driven, multi-faceted and consistently monitor impact on attainment, making extensive use of data to inform decisions (Balfanz and Byrnes, 2006; Beecher, 2008). For instance, Success for All requires extensive professional development for teachers, cooperative learning, systematic phonics, parental involvement, one-to-one tutoring, and attendance to social, emotional and behavioural issues. Evaluations of the model in both the US and UK found significant positive impacts on the academic attainment of children, particularly those from deprived backgrounds (Borman *et al.*, 2007; Chambers *et al.*, 2010; Slavin *et al.*, 2005). The London Challenge (see the section on targeted funding policies) witnessed similar comprehensive inputs and is analysed in detail later in this report.

A key message for the Scottish context is for schools and local authorities to exploit the flexibility provided within Curriculum for Excellence to design context-specific, whole-school reforms that raise attainment in pupils from economically disadvantaged households. Such interventions should, however, be informed by robust evidence and accompanied by regular monitoring of their impact on attainment levels.

Professional development and coaching

A hallmark of successful interventions that close the attainment gap is that they are backed by evidence-informed, high-quality, context-specific, intensive and long-term professional development for teachers, volunteers or mentors (Tivnan and Hemphill, 2005; Jackson *et al.*, 2006; Kennedy, 2010; Hindman *et al.*, 2012). For instance, one US programme, ExCELL, provided professional development for teachers that took place over a full year followed by a second year of support and coaching (Hindman *et al.*, 2012). This intensive training involved developing teacher content knowledge, literacy pedagogies, assessment and feedback; demonstrations of pedagogies by coaches; and observing and coaching teachers in the classroom, followed by regular group reflections after each cycle of implementation by teachers (Hindman *et al.*, 2012). Findings from this intervention showed improved vocabulary scores for all children. Most importantly, the intervention produced the strongest gains for disadvantaged children with the lowest initial vocabulary skills thereby helping to close the attainment gap. Similar intensive support was provided for the Heads Up programme in the US and for the London Challenge, all with resultant positive impact on the attainment gap (Jackson *et al.*, 2006; Hindman *et al.*, 2012). Although professional development programmes need to take into account context-specific issues rather than being pre-packaged approaches (Tivnan and Hemphill, 2005), they need to be informed by evidence and

accompanied by systematic monitoring of impact on attainment for them to be effective.

One key issue identified in our review is that teachers tend to receive significantly higher support during initial implementation of new programmes in comparison to when the programmes are implemented at scale. According to Sharples and colleagues (2011), sustained support for teachers should be built into mass roll-outs of programmes coupled with continuous monitoring and evaluation. A recent review of teacher education in Scotland highlights the importance of career-long professional learning for teachers in order to develop an effective profession (Donaldson, 2010). A key take-away message is that the nature of professional development programmes needs careful consideration in terms of being informed by robust evidence, relating in particular to their impact on the attainment of children from disadvantaged households.

Mentoring

Mentoring usually involves one-to-one matching of volunteer mentors with student mentees, with the mentor serving as a role model to a student from a disadvantaged background. Role models may provide academic or non-academic support, and may be from a similar background to the mentee or from a professional background relevant to the interests of the mentee. Existing JRF research and other studies (Cummings *et al.*, 2012; Higgins *et al.*, 2013) suggest that although evidence is inconclusive, effective mentoring can have a significant impact on the academic attainment of children from poor households and help close the attainment gap. Teacher mentors particularly have substantial impact on children from disadvantaged backgrounds. Effective approaches are characterised by provision of training and ongoing support for mentors, high-quality mentoring relationships, specified regular face-to-face contact, target-setting, longer mentoring periods, parental involvement and sufficient funding (Cummings *et al.*, 2012; Higgins *et al.*, 2013). While mentoring schemes currently exist in Scotland, not much is known about their impact on attainment (although see Wilson and Hunter, forthcoming). A more systematic evaluation incorporating evidence of effective strategies is needed to ascertain the efficacy of mentoring approaches in closing the attainment gap in the Scottish context.

Extracurricular activities/after-school programmes

Several interventions have been aimed at providing enriched extracurricular experiences for children from economically deprived households. These usually involve school-based or out-of-school activities. Examples include sports, music, dance, ICT and study skills activities. Overall, these programmes fall into non-academic activities; study support; and multi-strand extracurricular activities (Cummings *et al.*, 2012). Evidence from existing reviews (Zief *et al.*, 2006*)* and studies commissioned by JRF (Cummings *et al.*, 2012; Gorard *et al.*, 2012) suggests an inconsistent impact of participation in extracurricular activities on the attainment levels of children from deprived households.

Zief and colleagues' (2006) systematic review examined the impact of programmes that combined recreation and academic support services on the attainment levels of students living in poverty in the US. Of the individual studies examined, only one significant effect was found. Elementary students

attending after-school programmes had significantly higher social studies grades than control youths. There was no effect of attending after-school programmes on reading achievement. When participants' grade-point averages were considered (using data from the five evaluations), it was found that after-school programmes were having a small but significant effect on improving participants' grades. In other words, programmes may be having an impact on raising grades but these impacts are quite small.

Cummings and colleagues (2012) found in their review that only participation in academically focused activities such as provision of study support had a significant impact on narrowing the attainment gap. This area is, therefore, worth further investment, particularly with respect to projects that have a clear focus, develop study skills, and are aimed at raising educational attainment (Gorard *et al.*, 2012). There were inconsistent impacts from participating in other types of extracurricular activities. A key take-away message for Scotland is to ensure that activities have an academic element if the aim to close the attainment gap.

Targeted funding policies

The evidence reviewed suggests that all successful programmes are accompanied by targeted funding. Mindful that provision of finance alone is not sufficient to make a difference to attainment, we have examined three targeted funding schemes in a bid to learn from successful approaches: Title I in the US (van der Klaauw, 2008), the City and London Challenges in England (Hutchings *et al.*, 2012) and the Pupil Premium in England (Carpenter *et al.*, 2013).

Title I
Title I is a US funding scheme that provides more than $12 billion in annual financial assistance to state and local education agencies. The programme was set up in 1965, and reauthorised in 1994, and again in 2001. It provides supplementary educational services in reading and mathematics to improve attainment of students from deprived backgrounds. The funding is therefore directly targeted at students in need. Van de Klaauw (2008) evaluated the impact of Title I on the educational attainment of children living in poverty in New York from the 1993, 1997 and 2001 school years. The results showed that Title I was ineffective at raising student performance, and appeared to have had adverse effects on attainment during the 1993 and 1997 school years. For example, students in Title I schools were significantly more likely to score in the bottom two quartiles nationally by 3.55% and 5.26% points, and less likely to read above the state standard by 8.25% points. Compared with the two earlier school years, there was less evidence in 2001 that the programme had had a negative effect on student attainment. It was reasoned that the absence of negative impact in 2001 was due to changes made to the programme after the 1994 reauthorisation.

Several reasons were found for the poor impact of the programme on closing the attainment gap. First, schools with a high proportion of children living in poverty faced reduced entitlements immediately the attainment for pupils in the school started to rise, whereas poor student performance resulted in increased funding. This served as a disincentive for schools to improve. The reforms prior to 2001 ensured greater targeting of funds and the link between the amount of funding and achievement was removed. Second, receipt of Title I funding did not translate into a significant increase in per-pupil expenditures. While Title I eligibility meant that each student

within a school was entitled to funding of $300 to $400 dollars, overall increase in expenditures per student varied significantly between $108 and $448 in 1993 and 1997. By 2001, there was a decrease in overall expenditures of $325 per student in a Title I school. Thus, Title I funding was a very small share of the school's total budget. More critically, estimates for 1997 and 2001 suggest that Title I schools on average received smaller non-Title I allocations. There were claims that city and the state authorities appeared to have shifted some of their own funding from Title I schools to non-Title I schools. These practices were also found at the national level (Gordon, 2004, cited in van de Klaauw, 2008). Third, the mode of delivery of Title I programmes was based on an approach that separated students with Title I funding from the rest of the class for remedial action. This approach was found to be an ineffective pedagogical strategy and had a stigmatising effect that resulted in adverse outcomes (Jendryka, 1993, cited in van de Klaauw, 2008).

The London and City Challenges

The London Challenge took place between 2003 and 2008. Following its success, the City Challenge was launched in 2008, providing approximately £160 million of targeted funding to schools in London, Manchester, and the Black Country (Dudley, Sandwell, Walsall and Wolverhampton). The purpose of the scheme was to improve educational outcomes for children from poor families and close the achievement gap. The programme emphasised support for schools, a fundamental shift from the previous rhetoric of a 'zero-tolerance of failure' (Hutchings *et al.*, 2012). The Challenge programmes were whole-school reform programmes. Key elements included an emphasis on collaboration between schools, school leadership, use of data, and systematic evaluation to monitor impact on attainment. The City Challenge programme built on principles from the London Challenge, although there were key differences in the implementation of the programme in Manchester and the Black Country. For instance, in London there was a strong emphasis on the use of data. Comparative data from collaborating schools was published to track progress and guide decision-making. In Manchester and the Black Country, collaborative activities between schools did not necessarily involve making comparative data available to guide decisions and activities. Additionally, while the London challenge was focused on supporting collaborating schools to improve pupils' attainment levels, programmes in the City Challenge were ambitiously aimed at improving performance across broad geographical areas. This meant that unlike in London, programmes in Manchester were very thinly spread and schools had limited involvement. Finally, while London Challenge had specified sets of activities for schools involved in the programme, the inbuilt context-specific flexibility of the City Challenge meant that there were no specific guidance provided for schools and schools used the funding in different ways.

Evaluation of the Challenge programme revealed different degrees of success in the primary and secondary sectors, and in geographical areas. Between 2008 and 2011, the attainment of primary school pupils eligible for free school meals (FSM) in participating schools increased by more than the national figure in all areas, London, Manchester and the Black Country. However, whereas the attainment gap between those eligible for FSM and their wealthier peers in London was narrowed by 3.5% (a stunning result compared with the national average of 2.2%), and was also narrowed in the Black Country, this was not the case for Manchester primary schools. For secondary school attainment, results between 2008 and 2011 showed an increase in attainment levels of secondary students on FSM in all three

City Challenge areas. However, only in London did this increase exceed the national figure to narrow the attainment gap between rich and poor by about 2% (compared with the national average of 0.3%, another stunning result for London). For Manchester and the Black Country, however, although attainment levels rose, the gap did not narrow. In conclusion, only the London Challenge schools narrowed the attainment gap in secondary schools.

In evaluating specific approaches adopted by schools, Hutchings and colleagues (2012) noted that targeted approaches focused on buying in external support for tuition for exams produced only short-term effects, while long-term strategies such as parental involvement had a long-term effect on attainment. There was also evidence that targeted funding that fostered strong collaboration between schools, with decisions driven by efficient use of data, were successful at narrowing the attainment gap. Finally, the targeted funding provided a platform for raising awareness about the attainment gap and the systematic disadvantage faced by students living in poverty among schools and society.

The Pupil Premium

The Pupil Premium, launched in 2011-12, provides targeted additional funding to schools in England with the sole purpose of enabling them close the attainment gap between children from poor backgrounds and those from wealthier households. Schools were allocated £488 in 2011-12, £623 in 2012-13, and £900 in 2013-14 for each pupil in the school who is eligible for free school meals or has been looked after continuously for more than six months. This corresponds to a total budget commitment of £625 million, £1.25 billion and £2.5 billion nationally over the specified periods to tackle the attainment gap. Schools have flexibility with respect to how this money is spent, but are required to account for what it has been spent on and how it has affected pupil attainment.

While the impact of the scheme on closing the attainment gap is too early to determine, initial evaluation of the funding (Carpenter *et al.*, 2013) shows that schools have a positive attitude towards the funds and are using them to support a wide range of activities aimed at closing the attainment gap. About two thirds of schools indicated that they would not have been able to do as much for disadvantaged pupils without the funding. However, the report also identified key issues that will have implications for whether or not the scheme will have an impact on closing the attainment gap. First, it was found that over 60% of schools in receipt of the Pupil Premium reported a reduced overall budget, attributed to the disappearance of funding for existing initiatives. There were also differential formulae being adopted by local authorities to determine funding allocation for schools, and an increased tendency of some local authorities to charge for services they had hitherto provided free of charge to schools. Schools were seeing the funding of Pupil Premium grants as additional funds and pooled this together with school budgets to keep providing services that had previously been funded from other sources. The pooling of budgets also suggests that there is a need for a more robust approach towards school accountability for how the Pupil Premium budget is used.

Second, it was found that the most common source used by schools in decisions about what to spend the money on was the schools' own experience of what works. While this signifies positive attempts to adopt context-specific measures, the lack of attention to more widely evidenced academic research raises issues of how schools can be supported to integrate academic evidence into their decision-making. This is important

because schools' own evidence is likely to be less robust; what is believed to work in closing the attainment gap does not always turn out to be the case. Continuous and consistent monitoring of impact on academic attainment of students from low-income households is therefore needed to ensure real-time impact is being made in closing the attainment gap.

A key message for closing the attainment gap in Scotland is that policies are unlikely to achieve meaningful results without resources. The successful approaches discussed in this review require additional funding to work. For instance, provision of intensive, evidenced-based professional development for teachers covering specific pedagogies requires additional resourcing; so do effective parental involvement programmes. The evaluation of targeted funding so far points out that such an approach could make a significant difference in closing the attainment gap in Scotland. However, this has to be done in a way that results in genuine increases in school funding.

Lessons from the Title I project in the US and Pupil Premium funding in England suggest that it is important to take into consideration what happens to school budgets when target funding is introduced. Steps must be taken to avoid a situation where an increased budget in one area is undermined by a reduced budget elsewhere. Where targeted funding does not result in significantly increased resources, the policy of closing the attainment gap is unlikely to succeed. There are also important lessons to be drawn from the London and City Challenges. Targeted funding can only succeed in closing the attainment gap if there are supporting structures that help schools to team up, draw on robust evidence, and obtain and use robust data to guide decision-making. There should be clarity of purpose for the funds and support for schools to systematically evaluate the impact of interventions on closing the attainment gap.

Government poverty reduction strategies

Our review suggests that income levels have a direct impact on pupils' educational attainment. The complex pathways whereby poverty affects children's learning through health, parental interactions, home and community environments and lack of resource limit the capacity of education on its own to make a difference. If schools are to close the gap, they must be supported by anti-poverty strategies aimed at reducing income inequality. A recent systematic review commissioned by the JRF (Cooper and Stewart, 2013) shows that changes in parental income levels directly lead to increases in educational attainment of children living in poverty, and contribute to a substantial narrowing of the attainment gap. The authors estimate the effect to be equivalent to outcomes attained through investing in early childhood programmes or education. Most importantly, increasing household income can result in multiplier effects on areas like parenting, home environment or maternal depression. Findings of a study examining PISA data and poverty reduction policies across 18 OECD countries found that where the economic policy environment favours single low-income parents, the literacy attainment gap decreases between children from single-parent households and those from two-parent families (Hampden-Thompson, 2013). The findings have a direct implication for poverty reduction strategies, considering the fact that children living in single-parent households are more likely to be in poverty. A key message for Scotland is that reducing the attainment gap must involve concrete strategies that increase income levels to families living in poverty.

4 THE IMPORTANCE OF USING EVIDENCE TO INFORM ACTION TO CLOSE THE ATTAINMENT GAP

This chapter explains why it is important for education professionals to use evidence to inform action. It also summarises the evidence about pupil performance that is available to education professionals working in the various sectors in Scotland.

The main points that emerge from this summary are that:

- Evidence can help educators and policy-makers understand and address the multiple aspects of disadvantage that affect children's lives, and the mechanisms that cause negative effects. It can also help them identify sustainable initiatives likely to work, and to direct core resources appropriately.

- The quality and quantity of attainment data available for primary and early secondary school pupils is highly variable across Scotland, which makes robust, data-driven project design and evaluation difficult.

- There is a need for reliable research knowledge and evaluation information about what works to raise the attainment of pupils from economically disadvantaged homes in Scotland.

Perceptions of what makes a difference in education are not always right. Evidence from research has frequently challenged and redefined traditional professional judgements. Research on poverty, for example, has shown that:

- schooling is not fair: despite many policy initiatives in Scotland, the attainment gap remains;

- poverty and low attainment are not inevitably entwined;

- progress requires most pupils to overcome barriers rather than raise their educational aspirations;

- three quarters of parents living in poverty help their children with schoolwork;

- teacher expectations can positively improve (or negatively amplify) the educational outcomes of children living in poverty.

Evidence to identify what matters, to evaluate and to monitor impact

A profession is defined by the knowledge that its members possess, the ways in which they apply this knowledge, and the standards that they are required to meet in doing so. Evidence from research and evaluations can inform professional knowledge. It can help educators and policy-makers understand and address the multiple aspects of disadvantage that affect children's lives. It can help them to understand the mechanisms that cause negative effects, to select sustainable initiatives and to direct core resources to those most likely to have an impact. It can also help them to design how to collect worthwhile data during implementation and use it to adapt teaching, school systems, curriculum designs and projects to make learning efficient and effective for particular groups of pupils.

Yet this review found very little research or evaluation evidence about which initiatives have made a significant difference to children's learning in Scotland, or which children they have made a difference to, and how. It is likely that effective approaches do exist at micro-levels, but it is difficult to identify them because evidence of impact on attainment is not easy to find or has not been systematically documented. The lack of attention to systematic evaluations of national and local initiatives makes it difficult to find out, and learn from, what has worked well and use it to raise the attainment of disadvantaged children in Scotland. This makes it difficult to build professional knowledge. To be most productive, evaluation measures need to be designed into the project or initiative at the start so that data is collected before, during and after implementation. We would also suggest that there is a need to focus many more evaluations to assess how effectively curriculum designs and projects close the achievement gap between rich and poor.

Our analyses suggest that interventions chosen to close the attainment gap should be based on robust research evidence, but this in itself is not enough to make interventions successful. Successful innovations introduce rigorous monitoring of pupil progress to evaluate whether intended outcomes are being achieved (Sharples *et al.*, 2011; Hutchings *et al.*, 2012). For instance, the effective schools and approaches examined in this review regularly monitor students' progress and teaching standards. They draw on this data to identify underperforming groups, to provide pupils with regular feedback, and to make informed decisions regarding target-setting and early interventions. They also monitor the impact of interventions. The data is also used to examine whether the gap is being closed rather than whether average achievement is improving.

The availability of useful data

The quality and quantity of attainment data available for primary and early secondary school pupils is highly variable across Scotland. In primary schools, teachers judge attainment based on performance in class-work activities. These judgements can be supplemented by information from the National Assessment Resource. This offers teacher-created, criterion-referenced test items and tracks progress against Curriculum for Excellent (CfE) levels. External assessment data has an important role to play in directing the considerations and efforts of professionals, and in challenging or confirming professional judgement. However, CfE levels are too broad to identify and track persistent underperformance among children from low socioeconomic groups. Also, the test items do not focus on those elements of learning most important to pupil progress and so are of limited use in modifying curriculum design.

Many schools and local authorities recognise the need for more nuanced external assessment data and pay for commercial, standardised literacy and numeracy assessments. However, sometimes the marking and analysis arrangements for these means that results arrive too late in the schools for them to be used to interrogate the curriculum, monitor the impact of innovations or inform teaching. Professional development to help teachers investigate, interpret and use the test results to adapt curricular provision is also required so that the data can direct professional attention. For instance, it can point to what matters for individuals, identify points of inquiry and assess how projects affect the attainment of children living in poverty.

The availability of useful knowledge

Interventions that close the attainment gap draw on robust research evidence of 'what works' to guide context specific decisions. We note that most published research evidence is in academic libraries, protected by 'firewalls' that require subscription to gain access.

Education Scotland currently provides some information on research and on Scottish projects judged to be successful by local authority managers. However, outside Scotland, national projects have been established to synthesise key findings from research in an accessible, searchable format so that they can inform professional and policy decisions. For example, What Works Clearing House (US Department of Education) creates specialised review teams, with a content expert, a methodological expert and review staff to generate general advice on a range of topics and summarise the weight of evidence for specific interventions. Other examples are the Education Endowment Foundation's (EEF) toolkit (England), which summarises randomised controlled trial evidence to ascertain what works to improve attainment levels among children from disadvantaged households. The narrow focus on randomised controlled trials in the EEF is limiting: it overlooks 'what works' in particular contexts or for skewed school populations; it does not document events after the researchers (and their research resources) withdraw; it omits valuable implementation knowledge; and it excludes knowledge from systematic cohort studies, case study series, surveys and social science methodologies. However, the principle of academics and practitioners working together to synthesise and publish research evidence on what works to deliver social justice in schools for pupils living in poverty is important. Other approaches include the Best Evidence in Brief newsletters (University of York), the Centre for Evidence-Based

Interventions (University of Oxford) and the Best Evidence Encyclopaedia (Johns Hopkins University).

We think that similar strategies need to be adopted in Scotland. Research evidence can help identify those interventions likely to have most impact for economically disadvantaged pupils. It can help schools by identifying the implementation factors that affect outcomes, and it can indicate which interventions may fit within the possibilities and constraints of particular contexts and resources. This means it should command attention.

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5 WHAT SCOTLAND CAN DO: LEVERS AND AGENTS FOR CHANGE

This chapter summarises what can be done to make Scottish education more equitable. It identifies the agents of change and mechanisms that are potential levers to effect positive change. Where necessary, it specifies what can be done to make these levers more effective. The chapter indicates that establishing and maintaining the focus on equity for pupils from economically disadvantaged backgrounds will require persistent and focused political and professional effort.

The chapter concludes that:

- There are some highly efficient actors for sharing and shaping how knowledge about poverty and attainment is used, including Education Scotland; local authorities and schools; SQA; non-government organisations; and universities.

- Poverty and attainment need to become more visible in advice about developing the curriculum, improving schools and raising educational outcomes for all pupils, and in national and local inspections of schools.

- The education community in Scotland needs a national evidence base of 'what works, for whom, in which contexts, and why' to understand and combat the impact of poverty on attainment.

- Data on pupil attainment will help educators know whether the curriculum is having a fair impact on all pupils and to analyse what needs to be done to ensure equity. Active measures to prevent the emergence

of high-stakes testing regimes must promote understanding of the role of data in directing professional decisions.

- Poverty should be considered at the conception, design, evaluation, report, and publication stages of national and local projects.

- The education community in Scotland needs to develop more powerful national and local working practices around the following:

    - how to better create, collect and share knowledge of interventions that improve the performance of economically disadvantaged groups;
    - how to design interventions and evaluations that generate knowledge;
    - how to make curriculum design and planning (at school, class and individual level) more nuanced and effective for economically disadvantaged groups;
    - how to deploy staff and resources to raise achievement in economically disadvantaged groups;
    - how to monitor and evaluate pedagogies, resources and initiatives for impact on economically disadvantaged groups as well as for general attainment.

Governance arrangements in Scotland require local authorities and schools to deliver a curriculum that meets the needs of the communities they serve. In theory, this promotes a curriculum that is non-uniform, responsive and locally managed. Professional decisions underpin the learning mix schools offer rather than statutory curriculum content or centrally mandated pedagogies.

Several agencies shape what happens in schools, but no single agency has direct control to determine the curriculum design, content or implementation decisions that schools make. To influence change in favour of equity, several key agencies need to create and maintain a strong and consistent focus on the poverty attainment gap. They need to use, and where necessary strengthen, the levers that exist in the system to effect change. This requires deep and widespread understanding of the poverty agenda and the specific curriculum and pedagogy issues for schools because in each agency there is potential for the focus to be redefined. Agents for change are located in:

- the Scottish Government;
- Education Scotland and other government agencies such as Creative Scotland;
- local authorities;
- schools;
- non-government agencies, charities, unions and statutory bodies like the General Teaching Council for Scotland;
- universities.

Specific levers for change lie in the policy-into-practice mechanisms that exist in Scotland. These are:

- implementation advice for national policies and frameworks;
- curriculum development and intervention projects, and project reports;
- attainment data;
- knowledge about 'what works';
- professional development courses (initial and continuing), networks, communities and activities.

National policies and frameworks

An interesting feature of the agenda around poverty and educational achievement in Scottish education is that it is virtually invisible in the key documents that provide advice for schools and on-the-ground examples of policy and curriculum implementation. This matters because these documents frame school development priorities, professional plans for action and the 'challenge and support' conversations used to effect change. National strategies and frameworks allow space for poverty to be addressed, but this is unlikely to happen unless a 'poverty lens' is applied to the advice and exemplar materials that support professional understanding. Chapter 2 of this review identified the following national strategies and frameworks as powerfully shaping what happens in schools:

- *Curriculum for Excellence/Building the Curriculum* (Scottish Government, 2006-11);
- *Journey to Excellence/How Good is Our School* (HMIE, 2007);
- *Getting it Right for Every Child* (Scottish Government, 2012c);
- *Formative Assessment/Assessment is for Learning* (Scottish Government, 2011b)
- *Principles of Inspection and Review* (Education Scotland, 2011).

Curriculum for Excellence (CfE) affords schools and teachers the flexibility to design, plan and teach the curriculum in ways that offer bespoke solutions to the challenges their communities face. Support documents in the Building the Curriculum series need to show how this flexibility should be applied to address issues around poverty and educational attainment. For example, although Building the Curriculum 3 acknowledges that socioeconomic disadvantage is linked to low literacy, poverty is omitted when it lists sources of inequality that need to be considered in curriculum design: 'It has been acknowledged that a person's race, national or ethnic origin, gender, sexual orientation, religion or disability has the potential to put them at a disadvantage' (Education Scotland, 2008b, p. 48). The poverty landscape is complex for education. Schools serving economically advantaged communities with pockets of poverty may require different solutions from those serving more widely disadvantaged communities, and we would argue that poverty deserves its own Building the Curriculum document. The flexibility CfE affords needs to be seen to be working to meet the needs of economically disadvantaged pupils.

Journey to Excellence/How Good is Our School (HGIOS) and Getting it Right for Every Child also need illustrations of how they are to be used to identify, monitor and address equity issues arising from poverty. It would be particularly beneficial to highlight how self-evaluation and 'challenge and support' conversations should explore the relationship between poverty and attainment. Such illustrations could focus attention on how school leadership, teacher expectations, curriculum content, design and pedagogies, as well as wider school and community/work engagement arrangements, can effect better outcomes for this group.

Advice on implementing formative assessment needs to alert education professionals to the possibility that strategies may have different impacts in different contexts or on pupils from different home backgrounds. School leadership teams and teachers should monitor the impact of both formative and summative assessment on pupil attainment, self-efficacy and engagement, and respond sensitively and productively to the evidence. This,

rather than extant foci on strategies such as setting 'success criteria', should be used to determine the depth and breadth of implementation.

The document *Principles of Inspection and Review* (Education Scotland, 2011) sets out how Education Scotland HM inspectors monitor attainment and policy implementation in schools and local authorities. Inspectors provide independent assurance and accountability, collect evidence to inform national policy development, promote the adoption of effective practice and help professionals increase their own capacity to self-evaluate and drive improvement. Inspections are based on self-evaluation data using the Journey to Excellence/HGIOS framework but focus on outcomes and impact, and on promoting equality and diversity. However, equality is aligned to legislative requirements for disability, gender and race rather than non-legislative issues such as poverty. This means that inspectors may not ask all establishments about how poverty links to attainment, or how their curriculum design, content and pedagogies meet the needs of pupils from economically disadvantaged homes. Making poverty a more routine and central part of the inspection agenda would both raise the profile of poverty issues, and increase the knowledge base about what works.

National and local projects

Curriculum development and intervention projects can raise awareness of the educational experiences of children living in poverty. They can also affect attainment, generate knowledge and build professional understanding. Our telephone enquiries about national and local projects and our analysis of national website materials indicate that research knowledge about poverty and educational achievement is not routinely used to frame, design, evaluate, analyse, report or tag curriculum development projects. This makes it hard to collate accounts of national and local education initiatives that close the attainment gap. The lack of routine focus on poverty seems inexplicable, given that poverty is the biggest factor associated with academic failure.

Projects that distribute resources, or apply curriculum innovations in an unfocused way miss the opportunity to build an understanding of those groups most in need of help. Equal provision does not equate to equal opportunity; by default, the most vulnerable groups may become invisible and it is unclear whether such projects reach them, how they respond, whether they work for them, or how they work. This allows projects to be declared successful when actually they enshrine existing disadvantage.

Those involved in projects that seek to have an impact on education, particularly on pupil attainment and engagement, professional understandings, curriculum development or curriculum implementation, have a moral and professional duty to consider how the evidence on the educational outcomes for pupils living in poverty might inform and direct both the project as a whole and their own work in it. Questions about how the project relates to poverty need to be considered when projects are first scoped and when decisions are made about their focus, design, implementation, evaluation, analysis and reports.

Chapter 4 reports that evaluation evidence about which projects have made a significant difference to children's learning in Scotland is hard to find. National projects, and those local projects given a national profile, should set the quality standard for evaluation. National reports of projects, whether on websites or professional networks, need to attend to the quality of the evaluation data, and to the range and robustness of the evidence and not just report teacher impressions of impact. In the case of national projects in

particular, external, mixed-method evaluations need to systematically collect and analyse direct measures of impact on pupils, the context and nature of implementation, the costs (both in terms of staff effort/time and in material resource) and the long-term impact.

National and local authority projects have the potential to be a strong lever for change. However, to release this potential requires focused project specifications with designs informed by the existing knowledge of what works, and stronger evaluation measures. Projects that lack these features are a weak lever for raising attainment and for changing national awareness, aspirations and understanding of how the educational outcomes for pupils from economically disadvantaged homes can be raised.

Data for monitoring student attainment

Data on pupil attainment can direct the efforts of teachers, schools and local authorities. It needs to be used in conjunction with reliable knowledge to drive 'support and challenge' conversations about individual pupil progress and about how well the curriculum is meeting the needs of pupils from economically disadvantaged homes. Currently, gaps in data availability limit the extent to which this can be done for some age groups.

Data is most easily available on pupil attainment in the latter half of secondary school education. The Scottish Qualifications Agency (SQA) releases summaries of exam tariff scores for pupils aged 15-18 to local authorities and schools. These summaries include:

- the National Comparison Decile, which provides a rank order of all secondary schools' performance of attainment against poverty measures over five years;

- the comparison with comparator schools measure, which indicates performance against comparators with similar profiles.

New SQA Dashboard data will provide national, local authority, school and student-level information linked to economic deprivation factors about literacy and numeracy attainment, the quality and quantity of attainment, and school-leaver destinations. The data will be in a form useful to inspectors, local authorities and schools to focus on how to mitigate the poverty attainment gap. This is a very positive development.

Attainment data for primary and lower secondary pupils is based on teacher judgements. This makes it difficult for school and local authority staff to easily identify how poverty links to attainment, to identify and analyse patterns of need, or design and monitor curriculum innovations. Some local authorities and schools use commercial, standardised tests from England. These collect postcode and free school meal information, but it is unclear how such data is actually used in schools. Some schools use it just for baseline accountability.

To inform teaching and learning, data needs to be easily and quickly available in a useful form to teachers, and teachers in turn need staff development to help them analyse and respond to it productively. Buying commercial tests is a significant and continuous drain on the school/local authority budget. Were Scotland to develop such tests as a national resource, free on demand to Scottish schools and local authorities, local authority efforts could focus on using the data to promote equity.

Reliable knowledge and research

Knowledge is a powerful lever for change. To act in ways most likely to be effective, professionals need an evidence-base of what works, for whom, in which contexts, and why. Without this, professional effort may be wasted trialling solutions known to be ineffective, and opportunities to make collective progress may be missed.

Chapter 3 of this report outlines evidence about what works to increase the attainment of pupils living in poverty. It indicates the need for a knowledge bank and mobilisation strategy so that robust, evidence-based knowledge is available for those who make or influence education decisions, and who fund or propose projects that could have an impact on education. Professionals likely to find such a knowledge bank useful obviously include early years professionals, teachers, head teachers, local authority staff, national development officers and inspectors. Such a strategy could also benefit librarians, staff at national agencies such as Creative Scotland, charities such as the Scottish Book Trust, local and national politicians, members of curricular advisory bodies, other non-governmental organisations (NGOs) that focus on poverty or education, and journalists. This is an indicative, rather than an exhaustive, list.

Construction of such a resource needs to engage a wide variety of professionals, and be in a format that is useful to them. Importantly, however, the content should be decided by groups with appropriate expertise in academic and curricular research, research methodologies, curriculum and pedagogy, national policy and school/local authority management.

Scotland forms a unique policy and curriculum implementation context. We need to understand how knowledge generated in international contexts transfers into a Scottish context. Chapter 3 of this report indicates wide gaps in our knowledge about what actually works for pupils from economically disadvantaged homes in Scottish schools. The empirical research has either not been done, or has not been done in sufficient quantity to generate reliable knowledge.

Research and evaluation knowledge is a potential lever for change and the lack of knowledge leaves Scottish education professionals unsupported in making professional judgements about which particular initiatives might work in the Scottish educational system, and how they might be adapted to work more effectively and efficiently.

Professional development and knowledge generation

Scottish professional development models emphasise building capacity for self-improvement within the system. Professionals at all levels share 'good practice' and teachers engage in school-based communities of enquiry and action research. While these are widely acknowledged as being effective ways to embed change, they need to be research-informed and data-driven to focus effort on, and generate reliable knowledge about, the impact of innovations on specific groups such as pupils living in poverty.

Professional development can only be a strong lever for change if it draws on such sound knowledge and data. Where it does so, professional development can encourage nuanced reflection on learning and teaching and bespoke curriculum innovation. Where professional development is not driven by data and robust knowledge, it tends to follow 'fads' and emphasise resources, procedures, activities and 'quick-fix' solutions.

Chapter 4 indicates the crucial role that robust knowledge and evaluation play in the process of generating reliable professional knowledge from teachers' experiences. Reliance on post-hoc evaluation measures and impressionistic data in school-based action research projects is problematic because interventions often look and feel successful to those who choose and action them, but may be skewed by the professional's enthusiasm or by the responses of a few highly visible pupils. Evaluation is a complex process and requires a particular form of professional development. It would be particularly appropriate for staff working in quality improvement, curriculum advice or development teams in local authorities and in Education Scotland to receive such development. Models of how strong, mixed-method evaluations are designed and used to build knowledge in school and teacher-based enquiries would then be more readily available for other local authority staff, schools and teachers to access.

Robust professional development can be a powerful lever for change. It generates applied knowledge, including implementation advice that goes beyond procedures, it raises questions and it feeds professional understandings about research, contexts of application and constraints. However, to work well as an agent of change, it requires robust knowledge, with good mobilisation, and exemplification through projects and data use.

Agents of change: the Scottish Government

National government is in a good position to increase the national focus on low educational achievement in pupils from economically disadvantaged homes. It can direct attention and resources to it, and promote evidence-informed knowledge about what works to make education more equitable. To effect change the Scottish Government can:

- raise awareness of the achievement gap associated with poverty;

- work to make robust attainment data available to all teachers, including those in the primary and lower secondary sectors, so that it can be used by schools for internal curriculum design, intervention and monitoring. This is not an endorsement of high-stakes testing regimes;

- set funding requirement rules that insist interventions be accompanied by well-designed evaluation measures to assess impact on attainment from the outset. The evaluation measures should be built into the programme schedule and not decided during or after commencement of the project. They should focus on direct measures of impact rather than on teacher perceptions, be published, and be made available for analyses that would help to build more context-specific evidence of what works for Scotland;

- establish a national knowledge bank and mobilisation strategy, underpinned by clear principles of what constitutes useful and robust knowledge, to inform national, local authority and school-level interventions. This knowledge bank should enable education professionals to attend to different kinds of evidence, consider issues of fidelity and understand the core characteristics that make a particular intervention successful. It should draw on academic and professional expertise.

Agents of change: Education Scotland

Education Scotland is a major lever for change through its HM Inspectors, who have responsibility for school and local authority inspection, and its national development officers, who have responsibility for developing and leading national projects and for promoting 'good practice' advice through staff development, networks, websites and conferences.

To improve the educational outcomes for pupils from economically disadvantaged homes, HM Inspectors in Education Scotland can:

- analyse and discuss attainment profiles by household deprivation in all school and local authority inspections rather than focusing on general attainment levels. Educators should show how they draw on this data and on knowledge of what works, to inform further decision-making;

- exemplify how national frameworks and strategies, including Curriculum for Excellence/Building the Curriculum, Journey to Excellence/How Good is Our School and Getting it Right for Every Child should be used to reduce the poverty attainment gap. Where necessary the documentation should be supplemented;

- identify and publicise projects that make good use of data and research evidence to inform the conception, specification, design, evaluation and impact reports on what works for pupils from economically disadvantaged homes;

- identify for colleagues in Education Scotland and elsewhere, those Scottish innovations in teaching that successfully close the gap.

To improve the educational outcomes for pupils from economically disadvantaged homes, national development officers in Education Scotland can:

- use staff development courses, networks, websites and conferences to increase awareness and understanding of the achievement gap associated with poverty and publicise information about robust, research-informed measures that reduce the poverty-related attainment gap.

- increase their understanding of how evaluation measures can be designed into, and used to drive, projects;

- Provide national exemplification showing how professionals respond to attainment data in ways that empower pupils, and how data-driven curriculum innovations can narrow the attainment gap;

- commission national projects and identify local projects that focus on closing the poverty gap in attainment and that illustrate good use of data in identifying, scoping, designing/planning, implementing, monitoring and evaluating impact;

- report and appropriately tag 'good-practice' initiatives that close the poverty gap in attainment, and provide detailed, evidence-based, knowledge-informed analyses of what worked, for whom, in which circumstances and why.

Agents of change: local authorities

Local authorities in Scotland have a statutory duty to deliver school improvement and are intimately involved in school governance and in allocating resources. The Association of Directors of Education Services has discussed national poverty and attainment data for S4-S6 but needs to also focus on issues about how to monitor poverty-related attainment gaps in primary schools and S1-S3. They need to publicise research knowledge on how local authorities and schools can address the educational disadvantage that results from poverty and promote nuanced interventions.

Local authorities in Scotland have flexibility over budgetary allocations to schools. The deprivation component of this budget is small, and authorities must adopt evidence-based and data-driven approaches to spending this money, targeted on raising attainment. For instance, clear lessons can be drawn from the London Challenge to reduce the attainment gap.

To improve the educational outcomes for pupils from economically disadvantaged homes, directors of education can:

- ensure that improving the educational outcomes for pupils from economically disadvantaged homes is prioritised in the local authority and school development plans;

- raise awareness and understanding of the attainment gap associated with poverty, the research on how it might be closed, the strategies favoured by the local authority, and the role of all education staff in implementing these.

- Devise evidence-based and data-driven approaches to close the poverty attainment gap and ensure these are prioritised in schools.

In many (although not all) local authorities, quality improvement officers (QIQs) offer 'support and challenge' to schools through improvement planning, performance review and pastoral support. They may also develop authority-wide curriculum projects. This makes them important change agents.

Increasing the understanding of QIOs, their knowledge about what works and the mechanisms to lever change, would have a direct impact on schools. It is important, for example, that QIOs use data-driven decisions to identify ineffective interventions and avoid situations where interventions or curriculum resources are purported to be making a difference and are therefore rolled out to other schools, but turn out not to work.

To improve the educational outcomes for pupils from economically disadvantaged homes QIOs can:

- develop their own knowledge of evidence-based poverty interventions and of how to design data-driven projects with robust evaluation built in to ascertain impact on attainment;

- make the poverty/achievement gap a standing item on the agenda for meetings between QIOs and school managers in all sectors of schooling;

- focus 'support-and-challenge' discussions on the achievement gap associated with poverty and on applying research knowledge of what might work in a particular school context in nuanced ways;

- promote high-quality professional development programmes, projects and implementation advice for teachers. These should be evidence-driven,

promote school-to-school links and be focused on raising attainment to close the poverty gap;

- consider the assessment data available to teachers and provide or commission staff development on how this can be used to tailor curriculum design, teaching content, pedagogies and school systems.

Agents of change: schools and teachers

Curriculum for Excellence offers flexibility for schools and teachers to design context-specific, whole-school approaches that bridge the gap between learning in school and the experiences children have outside school. To do this, school management teams and teachers need to know how pupils from economically disadvantaged homes perform in their school and class. They need to draw on robust evidence of 'what works' for children from disadvantaged backgrounds and use it to inform their curriculum design, content and pedagogical interventions.

We are aware that 'what works' might be context-specific and there should be room for professional innovation. However, this has to be accompanied by regular monitoring and evaluation to ascertain impact on attainment, and there should be increased focus on reducing the attainment gap.

Many schools are facing a challenging change agenda, but school managers must ensure that mitigating the effects of poverty on attainment is prioritised in school development planning and project implementation. It is, after all, the factor that has the biggest impact on attainment. Teachers need to attend to the characteristics that make particular pedagogical interventions effective. They need to focus on fidelity to deep understanding and on informed, reflective and responsive teaching. Effective professional development should be guided by robust knowledge, driven by evidence, and attend particularly to attainment for those children from disadvantaged backgrounds.

To improve the educational outcomes for pupils from economically disadvantaged homes, school management teams and teachers can:

- raise their own awareness and understanding of the achievement gap associated with poverty and knowledge of how it might be addressed;

- prioritise the poverty/achievement gap for action, staff development, planning and intervention;

- monitor and analyse the poverty and attainment links in the school/class and consider the implications for curriculum design, planning and teaching (for the school, classes and individual pupils);

- make responsive and research-informed decisions about how to deploy staff and resources to raise achievement among economically disadvantaged groups;

- monitor how new pedagogies, resources and initiatives affect economically disadvantaged groups and not just focus on the general school/class population;

- increase their commitment to staff and curriculum development through involvement in focused, evidence-based, poverty intervention projects and networks designed to raise attainment and close the gap between rich and poor.

Agents of change: universities

Universities should be asked about how initial and post-qualifying teacher education courses address poverty issues. Scotland's education research community also needs to be more involved in discussing, generating and reviewing national advice. Re-engaging university staff in projects to study the impact of poverty intervention projects on educational outcomes would support evidence-informed decision-making. There is a need for large-scale, mixed-methods research and evaluation studies that generate qualitative and quantitative data and can support the design, implementation and evaluation of new curricula programmes and interventions.

To improve the educational outcomes for pupils from economically disadvantaged homes, universities can:

- share how they promote evidence-based knowledge about poverty and what works for pupils from economically disadvantaged homes in pre-service and career-long professional learning programmes;

- focus on developing empirical research and evaluation studies that help educators to understand educational inequality relating to poverty in Scotland, identify effective and efficient projects and understand the active ingredients of successful 'gap-busting' projects.

Other stakeholders

The Scottish Qualifications Agency, the General Teaching Council of Scotland, national agencies such as Creative Scotland, national advisory groups such as the Standing Literacy Commission, teachers' unions, NGOs such as the Scottish Book Trust and charities that work with educators or with disadvantaged communities can also raise political, professional and wider society's awareness of the links between poverty and educational attainment and can exert pressure for it to be prioritised in the school system – see, for example, EIS (2010) and the SQA Dashboard initiative described earlier in this chapter.

All stakeholders should make determined efforts to ensure that their own education work attends to the research on links between poverty and attainment in Scotland. Projects should draw on existing research evidence and, where possible, bring a poverty focus in project design, resource and evaluation so that projects build understanding of how to effectively increase the attainment of pupils from Scotland's poorest homes.

To improve the educational outcomes for pupils from economically disadvantaged homes, other stakeholders can:

- raise awareness and understanding of how poverty and educational attainment are linked through political, public and professional engagement;

- fund and support specific interventions, knowledge-identification and mobilisation activities, and evaluations;

- consider the educational outcomes for pupils living in poverty and how existing research might inform and shape all projects, at the stage when they are scoped, focused, designed, implemented, evaluated, analysed and reported.

NOTES

1 CfE defines five levels: Early (Preschool, P1); First (P2, P3, P4); Second (P5, P6, P7); Third/Fourth (S1, S2, S3); and Senior Phase (S4, S5, S6). Children and young people are expected to move through levels and subjects at their own pace and thus can be at higher or lower level relative to their classmates.

2 Data from www.scotland.gov.uk/Publications/2013/04/8843/0

3 Deprivation is measured using the Scottish Index of Multiple Deprivation (SIMD) 2009 (where pupils live, not where they go to school). Data is split into three groups of unequal terciles, bottom 30 per cent, middle 40 per cent and top 30 per cent of datazones. While children from the poorest households are disproportionately represented in the lowest SIMD, this area-based data is limited as not all poor children live in poor postcodes and vice versa.

4 Data from www.scotland.gov.uk/Publications/2013/04/8843/0

5 Tariff score is calculated by simply adding together all the grades (converted into tariff points) accumulated from all the different course levels and awards obtained by a student. The current tariff score scale does not recognise pupils' achievements in individual National Qualifications units and non-SQA accredited courses, and it does not include achievements of pupils in special schools (data from www.scotland.gov.uk/Topics/Statistics/Browse/School-Education/TrendTariffScores).

6 See www.scotland.gov.uk/Publications/2013/06/7503/8

7 Data from www.scotland.gov.uk/Publications/2010/12/10141122/15. The 2012 results were released after the main report was completed and at the time of submitting the final report.

8 Economic, social and cultural status combines a range of information provided by students about their parents' education, occupation and home possessions.

9 Activity agreements include those where there is an agreement between a young person and a trusted professional that the young person will take part in a programme of learning and activity that helps them become ready for formal learning or employment (Scottish Government, 2013b). Data from www.scotland.gov.uk/Topics/Statistics/Browse/School-Education/TrendDestinations

10 Data from www.scotland.gov.uk/Resource/0042/00426004.pdf

11 See also SFC (2013) report highlighting differences in types of higher education destination by deprivation quintiles. Data from www.scotland.gov.uk/Publications/2010/03/30180354/0

12 www.scotland.gov.uk/Topics/People/Young-People/legislation/engagement-events/services-bill

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APPENDIX: METHODOLOGY

A systematic review method was adapted and used for locating and synthesising evidence presented in this report. The approach generates comprehensive, criterion-based analysis of the available literature and utilises a robust, consistent method in retrieving, appraising and synthesising literature (Higgins and Green, 2011). Due to the purpose of the study and range of evidence considered, no meta-analyses were undertaken to provide summary statistics of effect sizes. The approach for generating the report encompassed three main phases: *Initial trawl, Screening and selection* and *Analysis and synthesis.*

Initial trawl: a systematic search for relevant references in databases using pre-specified search terms. The main database used was SUPrimo, the JRF website, Google Scholar, the What Works Clearing House and Scottish Government websites. SUPrimo is a comprehensive meta-database that includes key databases such as ERIC, ProQuest, PsychINFO and many others. In order to make data manageable, searches were restricted to selected databases iteratively. For instance, a search using the term 'poverty and educational attainment' was restricted to ERIC in the first instance and expanded to cover other databases such as PsychINFO in subsequent searches.

A snowballing strategy that involved following up interesting references cited in articles retrieved was also adopted. We were aware that within the Scottish education context, there are challenges relating to the lack of empirical evidence to address some key issues. Electronic searches were therefore complemented by email and telephone enquiries with key stakeholders, ensuring comprehensive coverage of existing evidence.

Various search terms were generated and used in locating literature for this report. The search terms were guided by and focused around the main remit of the study to allow for comprehensive coverage:

- The scale, nature and persistence of the attainment gap in Scotland and its consequences for later outcomes, especially in the labour market and in relation to poverty and low income in adulthood.

- The ways in which the problem has been considered and addressed in Scotland so far.

- What the evidence tells us about the most effective actions for schools and others in Scotland to take to reduce the gap in attainment between richer and poorer pupils.

- The lessons that can be drawn from the JRF research about the role of attitudes, aspirations and behaviours, and interventions relating to them.

- The importance of using evidence to inform action to close the attainment gap.

Screening and selection: pre-specified inclusion and exclusion criteria were specified to determine which materials were selected for inclusion in the final report. The criteria were guided by the terms of reference of the project and judgements about the quality/strength of the evidence to support claims made:

- aim of the study;
- design of the study;
- clarity in definition of indicators and outcomes;
- sample adequacy;
- quality of data and analysis;
- theoretical and ideological bias;
- robust peer-reviewed methodology;
- plausibility of claims and causal links based on evidence presented;
- relevance within the UK/Scottish context.

In reviewing evidence on what works to close the poverty educational attainment gap, the following additional criteria were used:

- studies evaluating interventions aimed at closing the achievement gap between children from poorer and richer backgrounds;

- studies aimed at evaluating interventions for improving achievement of children from poorer backgrounds;

- studies aimed at evaluating interventions for increasing achievement in specific curricular domains (for children from poorer backgrounds);

- studies using acceptable measures of poverty (free school meals, household or area-based socioeconomic status indicators);

- studies using objective measures of poverty and educational attainment;

- studies undertaken over the past ten years (2003-13) and published in English. Only in rare cases were articles consulted beyond this timeframe;

- studies using experimental and non-experimental designs. We chose to consider non-experimental studies because of the scarcity and difficulty

of experimentation in educational research. However, the quality of evidence was evaluated using other criteria (see above).

Analysis and synthesis: this involved synthesis of findings from the review using a structured protocol. The first stage involved identifying and summarising key elements/findings from each review in order to address each of the five aims highlighted in the project within the context of Scotland (Chapters 1-4 of the report). This section also addressed gaps in existing evidence. The second stage entailed bringing together the key issues addressed in the first section to construct a viewpoint (Chapter 5). The focus was on specific recommendations for action that can be taken by schools and various stakeholders to reduce the attainment gap between children from the poorest and richest background in Scotland.

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