# Addressing Educational Disadvantage

## A Review of Evidence From the International Literature and of Strategy in Ireland: An Update Since 2005

2017


Susan Weir, Lauren Kavanagh,
Cathy Kelleher, and Eva Moran

Educational Research Centre

# Addressing Educational Disadvantage

## A Review of Evidence From the International Literature and of Strategy in Ireland: An Update Since 2005

2017

Susan Weir, Lauren Kavanagh,
Cathy Kelleher, and Eva Moran
Educational Research Centre

www.erc.ie

Cataloguing-in-publication data

Weir, Susan

Addressing educational disadvantage. A review of evidence from the international literature and of strategy in Ireland: An update since 2005 / Susan Weir, Lauren Kavanagh, Cathy Kelleher and Eva Moran

Dublin: Educational Research Centre

iii, 75 p., 30 cm

Includes bibliographical references

ISBN-13 978-0-900440-60-1 (Print)

ISBN-13 978-0-900440-61-8 (PDF)

1. Educational equalisation – Ireland
2. Education and state – Ireland
3. Education – social aspects

2017

I Title, II Kavanagh, Lauren III Kelleher, Cathy IV Moran, Eva.

379.2609415 dc23

Printed in the Republic of Ireland by eprint, Dublin

# Table of Contents

# 1. Introduction

Educational disadvantage is an enduring cause for concern, both in Ireland and internationally, and addressing educational disadvantage continues to be central to education policy in Ireland. The primary aim of this report is to review the international literature on strategies identified as effective in addressing educational disadvantage and, in doing so, updating a similar review carried out by Archer and Weir in 2005. Summarising and critical evaluating the literature relating to each of six main strategies identified as effective in addressing educational disadvantage comprises the greater part of this report. A secondary aim is to examine the extent to which each of the identified strategies has featured in previous and current provision in Ireland. A brief description of the outcome of this exercise can be found towards the end of the document.

Prior to addressing each of the stated aims, the current chapter describes how research on educational disadvantage has been a central feature of the Educational Research Centre's work since its foundation. Periodic reviews of the international literature on educational disadvantage are an important element of this work.

**Background**

The issue of educational disadvantage has featured on the programme of work of the Educational Research Centre (ERC) more or less since the Centre's establishment in 1966. There are three main strands to that work: conducting evaluations of programmes aimed at alleviating the problems associated with educational disadvantage; assessing levels of disadvantage in schools and identifying schools to receive additional resources; and seeking to deepen our understanding of disadvantage in its determinants, nature and manifestations.

In relation to the first area, that of evaluation, the ERC has been involved in programme evaluation at several levels of the education system. Programmes evaluated at preschool level include the Rutland Street Project (Kellaghan, 1977) and Early Start (Kelly & Kellaghan, 1999); at primary level they include Breaking the Cycle (Weir, Milis & Ryan, 2002) and Giving Children an Even Break (Weir, 2004); and at both primary and post-primary levels they include the Disadvantaged Areas Scheme (Kellaghan, Weir, Ó hUallacháin & Morgan, 1995), the Home-School-Community Liaison Scheme (Ryan, 1999), and DEIS (Delivering Equality of Opportunity in Schools), which is the most recent programme aimed at addressing disadvantage in Ireland (Kavanagh, Weir & Moran, 2017; McAvinue

& Weir, 2015)[1]. Evaluations have aimed to assess the overall impact of each of the programmes on participants. With the exception of DEIS, an overview of the outcomes of the evaluations of these programmes was contained in a review by Archer and Weir (2005). The outcomes to date arising from the evaluation of DEIS will be summarised later in this report.

The aforementioned programmes all featured the targeting of resources (funding, staffing, and other) to schools serving students from disadvantaged backgrounds, although most of them also encouraged the targeting of resources within schools to the most students most in need. This approach to addressing problems associated with disadvantage is a form of positive discrimination intended to reduce the risk of educational failure among children from socioeconomically disadvantaged homes. The link between poverty and educational outcomes is well documented and made explicit in the definition of educational disadvantage contained in the Education Act (1998)[2] and in definitions of educational disadvantage proposed by others (e.g. Kellaghan, 2001). One of the primary goals of programmes aimed at addressing the needs of students from disadvantaged backgrounds is to bring about improvements in their educational achievements and attainments, which will be expected to ultimately have both personal and societal benefits.

The programmes listed above are school based, in that they are largely restricted to schools identified as catering for concentrations of students from disadvantaged backgrounds. Identifying schools for participation in such programmes requires a method of assessing levels of disadvantage, so that those identified as most disadvantaged can benefit. The ERC has been involved in the assessment of levels of disadvantage for many years, usually focusing on the socioeconomic characteristics of families served by schools. This has sometimes involved the construction of an application form for administration to subsets of schools already receiving resources for disadvantage (this was the case in selecting urban schools for participation in Breaking the Cycle – see Weir, 1999), the administration of a survey to all schools nationally seeking information on the socioeconomic profile of their enrolment (as was done for participation in Giving Children an Even Break – see Weir and Archer, 2005), and more recently using centrally available educational and socioeconomic data to identify post-primary schools for DEIS (see Weir, 2006). Because of the enduring relationship between home background characteristics and educational outcomes, the content of application forms and the choice of variables used to assess disadvantage in surveys has usually been guided by their association with educational outcome measures. A number of variables

[1] For more information on these programmes and others aimed at addressing disadvantage see the Social Inclusion section of www.education.ie

have emerged over the years as good *proxies* for disadvantage. At primary level, for example, the prevalence of residence in local authority housing of the student body has consistently been found to be associated with lower student achievement levels as assessed by standardised test outcomes. For that reason, it has featured (along with other indicators) in the assessment of levels of disadvantage for inclusion in The Disadvantaged Areas Scheme (1980s and 1990s), Breaking the Cycle (1996 – 2001), Giving Children an Even Break (2001-2005), and the primary dimension of DEIS (2006 to present).

Occasionally the Centre is approached to undertake work in the area of assessment of disadvantage for other purposes. For example, in 2014, the Centre undertook a nationwide survey of levels of disadvantage in all primary and post-primary schools at the request of the National Council for Special Education (NCSE) and the Special Education Section of the Department of Education and Skills (DES) as part of the development of a new model of allocating resources for special education needs (see Weir & Denner, 2015; Weir & Denner, 2016). Centre staff are also currently represented on a Technical Working Group established by the DES in 2015 to examine possible methods for future identification of schools for inclusion in a new programme to tackle educational disadvantage. Included in the group's terms of reference are 'to consider what eligibility criteria are now appropriate to re-identify the level of need in schools' and to 'examine all available data sources in order to determine an appropriate methodology for the development of a new assessment framework'.

An enduring feature of the Centre's work is the investigation of the nature, determinants, and impacts of disadvantage (see for example, Kellaghan et al. 1995; Kellaghan, 2001)**.** Some of this work has examined how disadvantage impacts on students as they proceed through the education system, for example by trying to establish if there is a progressive achievement gap between poor and more affluent students (see Eivers, Shiel & Shortt, 2004; Weir 2001). Other work has examined the impact on outcomes of concentrations of students from disadvantaged backgrounds at school level – a 'multiplier' effect – over and above a student's own socioeconomic background (Sofroniou, Archer & Weir, 2004). The Centre's work on identification has revealed some interesting findings in relation to the nature of educational disadvantage in different settings. Evidence from programme evaluations, and from survey data, indicates that the relationship between socioeconomic factors and educational outcomes is weaker in rural than in urban settings (Weir, Archer & Millar, 2009; Weir, Errity, & McAvinue, 2015). For example, rural students in DEIS schools performed significantly better than their urban counterparts in English reading and mathematics, a finding that could not be explained by lower concentrations of poverty in rural areas, nor by the smaller size of many rural schools. Instead, there was some evidence that the weaker relationship between poverty and

educational outcomes in rural schools relates to differential levels of home support available to rural students and differences between urban and rural students in how they spend their out of school time. These, and other issues related to the nature of disadvantage, continue to be important features of the Centre's programme of work. The literature review presented in this document is relevant to all three strands of the Centre's work on disadvantage described above, but is probably most relevant to the final strand, that of enhancing our understanding of disadvantage. In the last chapter, conclusions from the literature are then used to provide a framework for interpreting work on the first strand (evaluations of programmes).

The compilation of reviews in this publication represents the third attempt by the Educational Research Centre to describe what is known about effective strategies to address educational disadvantage from the body of published literature. The first of these reviews was commissioned by the (then) Department of Education in 1995, which requested the Combat Poverty Agency to review existing provision for students from disadvantaged backgrounds and to examine the criteria for identifying schools serving disadvantaged families. The Combat Poverty Agency approached the Educational Research Centre (ERC) to undertake this work. As well as investigating the criteria used to designate urban and rural schools as disadvantaged, the terms of reference of the study were to: (a) consider and report on the rationale which should underlie designation as disadvantaged; (b) assess the appropriateness of current indicators and, if necessary, suggest improvements and/or other measures; and (c) review existing support measures, and if necessary, suggest improvements and/or other measures.

One of the main recommendations that arose from the last aspect of that work was that resources should be targeted on a limited number of schools with high concentrations of pupils from disadvantaged backgrounds and low levels of achievement (Kellaghan et al., 1995). Another recommendation was that the intervention should be co-ordinated and comprehensive, and should adopt a multi-faceted approach to meeting the needs of educationally disadvantaged children. Specifically, Kellaghan et al. (1995) argued that seven elements should feature in this targeted approach. These were: 1. Curriculum adaptation at primary and post-primary levels (paying particular attention to literacy and numeracy skills); 2. Smaller classes, particularly in the early years to facilitate individual attention to pupils and to foster the development of relationships between teachers and pupils; 3. Pre-school provision, reflecting an emphasis on prevention rather than remediation; 4. A high degree of parent involvement in the educational process (both at home and at school); 5. The reform of school organisation to develop a unity of purpose and build on existing strengths of teachers and pupils; 6. Adequate financial resources for schools to operate comfortably; and 7. A high level of involvement of community agencies. In addition, it was recommended that the

participation of selected schools in the scheme should be supported by advice and professional development activities for school staffs.

The Department of Education responded to these recommendations by engaging the Educational Research Centre to develop revised criteria for selecting schools for participation in a new scheme targeting acutely disadvantaged schools. The new scheme, to be known as Breaking the Cycle, was described by the Minister for Education in September 1996 as "…an important new initiative which seeks to break the cycle of educational disadvantage in selected urban and rural areas". The Minister described the aim of the scheme as follows: "This Breaking the Cycle initiative seeks to discriminate positively in favour of schools in selected urban and rural areas which have high concentrations of children who are at risk of not reaching their potential in the education system because of their socio-economic backgrounds" (Ireland, 1996). The new scheme included several of the elements identified as desirable by Kellaghan et al. (1995). As a participant in Breaking the Cycle, each urban school was entitled to a maximum of 15 pupils in all junior classes (junior infants through to second class); special grant assistance for purchase of books, teaching materials and equipment; an enhanced capitation grant for each pupil; and targeted in-career development for staffs of the selected schools. To acknowledge what were considered to be previous failures to adequately provide for schools in rural areas serving disadvantaged students, Breaking the Cycle had a separate rural scheme serving about 125 small schools. Like their urban counterparts, these small schools received a range of supports, and a teaching resource which took the form of a cluster co-ordinator shared between small groups of participating schools. Two national co-ordinators were appointed to support the development of the programme in the rural and urban dimensions of the programme respectively.

Shortly after the introduction of Breaking the Cycle, the issue of educational disadvantage was to feature prominently in the Education Act (1998). Among other things, the Act included a formal definition of educational disadvantage as 'the impediments to education arising from social or economic disadvantage which prevent students from deriving appropriate benefit from education in schools' (Section 32, p. 32). In addition, the Act provided for the establishment of a statutory committee to be known as the Educational Disadvantage Committee (EDC), the remit of which was to advise the Minister '...on policies and strategies to be adopted to identify and correct educational disadvantage.' (Section 32, p. 31). A decade after the introduction of Breaking the Cycle, and while its successor programme Giving Children an Even Break was still in operation, the EDC requested the ERC to undertake several pieces of work on its behalf. These were to: 1. Update the review of the literature on effective strategies conducted for the Kellaghan et al. (1995) report; 2. Prepare an overview of existing evaluations of educational disadvantage programmes in Ireland; 3. Prepare a

brief commentary on core aspects of the implementation of Giving Children an Even Break (GCEB), which had not been the subject of a formal evaluation[3]; and 4. Comment on the extent to which existing provision in Ireland reflected the findings of the review of the literature described at (1) above.

The resulting work for the Educational Disadvantage Committee involved reviewing the international literature on each of nine main topics, as they relate to addressing educational disadvantage through the school system (Archer & Weir, 2005). These were:

- Reduced class size
- Preschool provision
- Parental involvement
- Links with the community
- Adequate financial resources
- Comprehensive school reform
- Improving literacy and numeracy
- Raising expectations
- Professional development.

The investigation of the extent to which provision in Ireland featured elements known to be effective in addressing disadvantage suggested that considerable progress had been made in the direction of implementing a multifaceted, evidence-based approach to disadvantage. Class-size reductions and the allocation of extra financial resources to schools in Breaking the Cycle and Giving Children an Even Break were noted, as was the promotion of parental involvement, most notably in the context of the Home/School/Community Liaison scheme. The development of links between schools and the wider community, the development of a limited number of high-quality preschools, and the promotion of school development planning, were found in various programmes. However, while programmes up to then featured some of the important elements, there was yet to exist a programme that aimed to consolidate them. The first programme to attempt to do so is the current one, DEIS (Delivering Equality of Opportunity In Schools), which was introduced in 2005/06 (DES, 2005). DEIS targets resources at schools with concentrations of disadvantaged pupils and includes all of the elements identified by Kellaghan et al. in 1995 and many of those identified by Archer and

[3] Findings from this commentary (Weir, 2004) and from a subsequent investigation of the GCEB programme for the DES (Weir, Archer, Pembroke & McAvinue, 2007) are summarised in the concluding section of this report.

Weir a decade later. The extent to which DEIS reflects best practice is explored briefly in the concluding section of this review.

The remainder of this document aims to update the 2005 review by examining literature published in the intervening years on some of the topics listed above. Four areas have been omitted from the current exercise on the basis that evidence for their effectiveness is strong, and that virtually all strategies for addressing disadvantage will feature them in some form or another. Specifically, additional funding to facilitate the purchase of educational materials is a ubiquitous feature of schemes addressing disadvantage in Ireland, as is the fostering of links with the community through the Home School Community Liaison (HSCL) Scheme and other local community initiatives in which schools participate. Comprehensive School Reform models promote a multifaceted approach to addressing the problems associated with disadvantage and have a strong focus on integrated services and school planning, both of which are features of the DEIS approach. Finally, DEIS is the first mainstream programme for disadvantage that has an explicit focus on both literacy and numeracy.

The review of the literature will be followed by a summary of evaluation findings regarding DEIS at primary level. Consideration will also be given to the extent to which what is considered to be effective is reflected in current provision in Ireland focusing on the DEIS programme. The literature review that follows is intended to refine and augment our understanding of effective strategies in addressing disadvantage and may be read as a standalone document. However, outcomes of research published in each area prior to 2005 are described only briefly. In some areas, the literature suggests there have been few changes in conditions of effectiveness since Archer and Weir's 2005 report. For example, in the first area reviewed – reduced class size – the earlier findings largely stand. In particular, class size reductions have been found to be most effective when made in the early years and for children from disadvantaged backgrounds. In other areas – for example, in the area of preschool provision – much has been learned in the interim about the systemic, structural and process factors in the preschool setting that lead to better outcomes for children from poor backgrounds. It is important to reiterate a point stressed by the authors in 2005 concerning the use of research findings for providing guidance for policy and practice. It should be noted that research findings in the areas reviewed are often contradictory and rarely conclusive. Also, much remains to be learned about the nature of the phenomena underlying disadvantage. These two constraints make it difficult to establish guidelines for designing interventions that will be effective in addressing the problems associated with disadvantage. However, as was pointed out in 2005, the seriousness of

the issues involved precludes postponing action until the research findings are more informative is not an option.

In preparing the review, consideration was given to including areas other than those that featured in 2005. While the search for other areas yielded little, it was thought that one new area – that of addressing disadvantage using summer programmes – merited inclusion.

## 2. Reduced Class Size

Archer and Weir's review of the literature on reduced class size identified a body of research that indicated that, in some situations, reducing class size may be important in producing improvements in student achievement. The evidence indicated that smaller classes (fewer than 20 students) in the early grades may positively impact student outcomes, the effects can be long-term, and that effects are greatest for children from minority and disadvantaged backgrounds. Much of the evidence supporting the effectiveness of reduced class size has come from four large-scale evaluations of class size reduction programmes implemented in the United States during the 1980s and 1990s: Project STAR (Student-Teacher Achievement Ratio) in Tennessee; SAGE (Student Achievement Guarantee in Education) in Wisconsin; California's state-wide class size reduction initiative; and Florida's class size reduction programme. Project STAR, implemented in the 1980s, has provided some of the most rigorous and widely cited evidence for the positive impacts of reduced class size on student outcomes. Findings from a randomised controlled trial of Project STAR demonstrate that students in small classes outperformed students in regular classes, that the benefits were greatest for students in the first four years of schooling, and for students from disadvantaged and minority backgrounds (Mosteller, 1995). These findings are consistent with results from an earlier meta-analysis of the effects of reduced class size, conducted by Glass and Smith (1979).

Throughout the past decade, the body of research on reducing class size to tackle educational disadvantage has grown. However, while many small-scale studies have been conducted, no large-scale randomised controlled trial has been undertaken since Project STAR. Nonetheless, secondary analyses of data from Project STAR have provided further insights, and, together with a series of smaller-scale studies conducted internationally, have served to enhance our understanding of class size effects. Recent reviews have evaluated the research evidence to draw together the key findings about the effects of a smaller class size on student achievement. For example, Zyngier (2014) conducted a systematic review of 112 studies undertaken internationally from 1979 to 2014, to assess the evidence for class size reduction effects, particularly for children from culturally, linguistically, and economically disadvantaged communities. In addition, Schanzenbach (2014) reviewed the academic literature on class size effects, focusing on Project *STAR* and various quasi-experimental studies conducted internationally, while Shin and Chung (2009) completed a meta-analysis involving 17 impact studies of class size effects conducted in the United States. These syntheses have produced findings consistent with the earlier review by Archer and Weir (2005), earlier work by Glass and Smith (1979), and findings from Project STAR.

**Effects of Reduced Class Size**

The research evidence indicates that children perform better in smaller classes, especially in the earlier grades (Schanzenbach, 2014; Shin & Chung, 2009; Zyngier, 2014), and that the number of students in a class should be fewer than 20 in order to maximise the beneficial effects (Glass & Smith, 1979; Zyngier, 2014). The achievement of students in small classes tends to be 0.15 to 0.20 standard deviations above the achievement of students in regular classes (Glass & Smith, 1979; Molner et al., 1999; Mosteller, 1995; Shin & Chung, 2009). For example, in Project STAR, classes containing an average of 15 students had average mathematics and reading scores that were 0.15 to 0.20 standard deviations higher than in classes with an average of 22 students (Word et al., 1990).

Findings from the literature also indicate that the small class size effect decreases as grade level increases, indicating that reduced class size can be most effective in the early grades, and in particular, in the first four years of schooling (Shin & Chung, 2009). The longer that children are exposed to small class sizes in the early grades, the greater the benefits in later grades (Zyngier, 2014). Moreover, achievement gains made as a result of long-term exposure to small class size persist even when students are later exposed to standard class sizes (Zyngier, 2014). For example, using data from Project STAR, Finn, Gerber, Achilles, and Boyd-Zacharias (2001) demonstrated that, when returned to standard classes in later grades, students in small classes in the early grades performed better than students who had been in standard classes in the early grades. Enduring effects in later grades were observed for students who had been in small classes for three to four years, while the benefits were greatest for students who had attended small classes for the first four years. These students demonstrated achievement gains of almost a whole school year, when compared to their peers who had attended standard classes during the first four years. Findings from quasi-experimental studies have also indicated performance gains for students in smaller classes in later primary school (Angrist & Lavy, 1999; Fredriksson, Öckert, & Oosterbeek, 2013), especially for disadvantaged students (Angrist & Lavy, 1999). However, more research is needed before definitive conclusions can be drawn about the impact on older primary level students (Schanzenbach, 2014; Zyngier, 2014).

While all students benefit from small class sizes in the early grades, research consistently indicates that students from disadvantaged and minority backgrounds benefit most (Glass & Smith, 1979; Schanzenbach, 2014; Zyngier, 2014). Data from Project STAR demonstrate that the small class size advantage for students from minority backgrounds is about two to three times that for other students (Finn & Achilles, 1999). Evidence further indicates that achievement gains made by

students from disadvantaged and minority backgrounds placed in small classes in the early grades are retained over subsequent years (Zyngier, 2014). For example, using data from Project STAR, Nye, Hedges, and Konstantopoulos (2004) demonstrated that for students from minority backgrounds, small classes in the first four years of schooling have a significant, positive effect on achievement over the following five years. Analyses of Project STAR data also demonstrate that for students from disadvantaged backgrounds especially, exposure to small classes in the early years increases the likelihood of high-school graduation (Finn, Gerber, & Boyd-Zaharias, 2005) and college enrolment (Dynarski, Hyman, & Schanzenbach, 2013).

In Project STAR, students were randomly assigned to either a regular class, a small class, or a regular class with a full-time teaching aide, while teachers and teaching aides were randomly assigned to classes. This enabled the examination of whether or not there was any achievement advantage to being in a class with a teaching aide as well as a class teacher. Examining Project STAR data, Finn et al. (2001) found that small classes were more effective at improving student achievement than both regular classes and regular classes with a full-time teaching aide. Small classes bestowed an achievement advantage over regular classes with a teaching aide, and this advantage was about 0.20 standard deviations (Finn et al., 2001).

Much of the research on the benefits of smaller classes has focused on primary school classes. However, there is also some evidence from the UK to suggest that smaller classes can benefit students at post-primary level, and particularly students who attain at the lowest levels (Blatchford, Bassett, & Brown, 2011). Using observational methods, these authors found that smaller classes provided more opportunities for individualised instruction, and that this was particularly beneficial for lower-achieving students who are more likely to engage in off-task behaviours.

An important issue that arises in discussions of class size reductions, is whether or not there is an optimal class size for beneficial effects on student achievement. Reviews of the evidence suggest that class size should be fewer than 20 students in order to maximise the beneficial effects (Glass & Smith, 1979; Zyngier, 2014). While it is sometimes assumed that 20 is the upper threshold, Blatchford et al. (2011) pointed out that this is based on research such as Project STAR, in which 20 was simply the midpoint of the class sizes compared. In their study, Blatchford et al. were unable to determine specific class sizes above or below which beneficial effects were likely to occur. The authors concluded that class size thresholds must be considered alongside other important factors such as teachers' beliefs and practices, and their experiences of various class sizes.

Zyngier (2014) concluded from his review that 'when it is planned thoughtfully and funded adequately, long-term exposure to small classes in the early grades generates substantial advantages for students and those extra gains are greater the longer students are exposed to those classes' (p.16). Poorly planned class size reduction interventions, however, can have unintended negative consequences (Chingos, 2013; Ready, 2008). First, universal class size reduction policies, such as California's state-wide class reduction initiative, can reduce the supply of quality teachers to disadvantaged schools by creating competition between schools for qualified teachers (Jepsen & Rivkin, 2009). As a result, students in disadvantaged schools may be exposed to the least qualified and least experienced teachers, and so will not gain fully from a reduced class size (Jepsen & Rivkin, 2009). Second, universal class size reduction policies inadvertently incentivise the use of multi-grade classes in schools, as schools may establish such classes in an attempt to reduce costs, while fulfilling class size reduction obligations (Sims, 2008). In analysing the California policy, Sims (2008) identified that multi-grade classes produced negative effects on student achievement, which cancelled out any positive impacts of the reduced class size. Therefore, as a result of the policy, students were, in fact, 'worse off in achievement terms' (Sims, 2008, p.477). In addition, Sims found evidence that schools serving greater concentrations of disadvantaged students were more severely impacted by multi-grade classes, despite being no more likely than other schools to establish them. Third, as observed with both the California and Florida universal class size reduction programmes, such reductions in class size put pressure on resources such as space and facilities and can lead to overcrowding. These difficulties disproportionately impact low-income and racial minority students (Ready, 2008).

The lessons learned from the California and Florida initiatives highlight that policy in the area of class size reduction must be viewed within the wider educational policy context. As Chingos (2013) noted, 'education initiatives do not operate in a vacuum. Policies designed to affect one dimension of a students' educational experience are likely to affect others as well' (p. 425). Therefore, to be effective, class size reduction needs to be planned carefully. Overall, the evidence supports the targeting of class size reduction policy to where it is most effective – at younger children in schools with high levels of disadvantage. Alongside this, adequate support and development for teachers and adequate resourcing for schools must be provided to ensure the maximum benefits of class size reduction are achieved.

The effects of a reduced class size can be lasting and can be observed for a variety of life course outcomes (Schanzenbach, 2014). Research indicates that students exposed to small classes fare better than their contemporaries exposed to regular classes on a variety of social, economic, and

educational outcome indicators (Chetty et al., 2011; Dynarski, Hyman, & Schanzenbach, 2013; Finn, Gerber, & Boyd-Zaharias, 2005; Krueger, 1999; Krueger & Whitmore, 2001; Krueger & Whitmore, 2002). In particular, long-term attendance in small classes impacts a range of educational outcomes beyond standardised test results (Zyngier, 2014), such as levels of school completion and college enrolment.

Few studies have explicitly sought to address the question of *why* students perform better in small classes than in regular classes. However, the available research suggests that smaller class sizes may impact student achievement through such factors as increased individualised instruction, improved teacher-student interactions, better classroom management, and increased interaction among students (e.g., Blatchford, Bassett, Brown, Martin, & Russell, 2004; Graue, Hatch, Rao, & Oen, 2007). The evidence strongly implicates classroom behaviour and particularly student engagement behaviours as mediating the relationship between class size and student achievement (Zyngier, 2014). Data from Project STAR indicate that students are more engaged in small classes and their behaviour is less disruptive (Finn, Pannozzo, & Achilles, 2003). In addition, students spend more time on task, while teachers spend less time on classroom management and more time on teaching (Graue et al., 2007). Students in small classes also continue to have higher engagement in subsequent grades (Finn, 1997).

However, the evidence suggests that teachers need to adopt teaching practices that are appropriate for small classes in order to maximise the beneficial effects of a reduced class size (Zyngier, 2014). According to Hattie (2005), 'teaching practices that are conducive to successful student learning are more likely to occur in smaller, rather than larger classes' (p.417), however, teachers are not necessarily equipped with these practices when assigned to smaller classes. A potential difficulty, therefore, arises where teachers fail to adapt their methods when moving from large to small classes, which may occur if teachers are ill-equipped, lack experience, or are unwilling to adapt. Evidence suggests that the performance of students is higher with more experienced teachers (Krueger, 1999), while new teachers can reduce student achievement by about the same amount as class size reduction enhances it (Jepsen & Rivkin, 2009). Schools with high concentrations of students from minority and disadvantaged backgrounds often have the least qualified and least experienced teachers, thus limiting their ability to maximise the benefits of a reduced class size (Jepsen & Rivkin, 2009). Therefore, while class size reductions provide opportunities to use more effective teaching methods, teachers need both time and support to develop and implement new techniques (Bascia & Faubert, 2012).

**Conclusion**

The evidence suggests that class size reduction is an area where educational policy can have a definite impact on student outcomes if adequately resourced and implemented in a planned manner. The recent literature is largely in agreement with the earlier literature in terms of conditions of effectiveness. Specifically, those most likely to benefit are children in the early grades and those from disadvantaged backgrounds. Reductions in class must be viewed within the wider educational policy context, and benefits are greatest when teachers are trained to exploit the opportunities provided by small classes.

# 3. Preschool Provision

Emerging evidence from the fields of psychology, neuroscience, and economics provides support for targeting the early years in the effort to counteract the negative educational and other effects associated with socioeconomic disadvantage (Pascal & Bertram, 2013). In their 2005 review of the literature on educational disadvantage, Archer and Weir pointed to a growing body of evidence on the benefits of preschool education for children's outcomes. Specifically, Archer and Weir referred to the benefits of preschool for the cognitive functioning, school readiness, and educational success of children from socioeconomically disadvantaged backgrounds. Since then, research findings have continued to reinforce these earlier findings, as well as making progress in identifying the characteristics of preschool programmes associated with the greatest effects for children from disadvantaged backgrounds. The available evidence relating to each of these areas is summarised in the following sections.

A body of robust evidence demonstrates that children who attend preschool have greater levels of school readiness than those who do not. This is indicated by greater language, literacy, and numeracy skills among those who attend preschool, when these are assessed at the end of the preschool programme or at the time of commencing school (e.g. Gormley, Phillips & Gayer, 2008; Ruhm, Magnuson & Waldfogel, 2007). Archer and Weir noted that, at the time of their 2005 report, there was consensus that preschool benefited children from disadvantaged backgrounds, but that there was debate over whether such benefits also accrued for children from more advantaged backgrounds. The existing literature now clearly demonstrates that preschool benefits children from all social backgrounds (e.g. Barnett, Brown & Shore, 2004; Gormley et al., 2008; Melhuish, Quinn, Sylva, Sammons, Siraj-Blatchford & Taggart, 2013). A meta-analysis of evaluations of preschool programmes serving diverse populations of children between 1965 and 2007, for example, estimated the average effect of preschool programmes as equivalent to approximately a third of a year of additional learning for preschool attendees over those who do not attend preschool (Duncan & Magnuson, 2013). However, while preschool appears to benefit children from all backgrounds, it does not do so equally; largest effects are seen in programmes targeting children from low-income families (e.g. Gormley et al., 2008; Sylva, Melhuish, Sammons, Siraj-Blatchford & Taggart, 2004; Weiland & Yoshikawa, 2013). Cost-benefit analyses of investment in preschool programmes have also shown that programmes targeted at children from disadvantaged backgrounds yield the highest per-child benefits (e.g. Heckman, Grunewald & Reynolds, 2006).

Despite the now well-documented positive effects of preschool, particularly for children experiencing socioeconomic disadvantage, there is some evidence that suggests that the cognitive benefits resulting from preschool involvement are not permanent (Camilli, Vargas, Ryan & Barnett, 2010). Several studies have found that the differences on tests of academic achievement between children who did and who did not attend preschool tend to reduce over time, and that test scores eventually converge (Yoshikawa et al., 2013). However, findings from longer-term evaluations have shown that, despite this convergence, a variety of other effects emerge that are positive for individuals and societies, highlighting the importance of not relying solely on the findings of short-term research when making policy decisions in relation to preschool provision (Schweinhart, 2013; Yoshikawa et al., 2013). These longer-term benefits include: Higher rates of completion of second-level education (Schweinhart, 2013), reduced participation in crime in adulthood (Schweinhart, 2013), lower likelihood of engaging in health-compromising behaviours (Englund, White, Reynolds, Schweinhart & Campbell, 2015), fewer depressive symptoms (Englund et al., 2015), lower likelihood of receiving state welfare assistance (Reynolds, Temple, White, Ou & Robertson, 2011), and higher incomes (Reynolds et al., 2011).

Much of this evidence comes from longitudinal studies of programmes delivered to children from socioeconomically disadvantaged backgrounds in the United States. These include the Perry Preschool Program, The Abecedarian Project in North Carolina and The Chicago Child-Parent Centers, although the body of evidence on preschool effectiveness has now moved beyond what was previously near-exclusive reliance on evidence from evaluations of these programmes (Yoshikawa et al., 2013). In terms of European research, The Effective Provision of Preschool Education (EPPE) in the UK is the first large-scale, longitudinal study of preschool effectiveness in Europe. As the number of studies on preschool programmes has grown, substantial variation in the size of effects of such programmes has emerged. A number of explanations have been posited for this. In a meta-analytic study of 123 preschool evaluations, larger effect sizes were associated with better research design quality. As the authors of this meta-analysis warn, this result highlights the risk of underestimating impacts of preschool programmes with low-quality research designs (Camilli et al., 2010).

However, even amongst evaluations with high quality research designs, there is substantial between-programme variation. Effects of the magnitude of those found in the Perry Preschool Project and similar smaller-scale projects have not been replicated in studies of larger preschool programmes catering for similar populations of children, for example evaluations of Head Start in

the United States (Gormley et al., 2008; Schweinhart, 2013). Schweinhart (2013) suggests that that differences between types of programme account for this discrepancy, arguing that the quality of the programme is crucial in determining the nature and extent of effects on outcomes.

**Factors Associated with Preschool Effectiveness**

In their 2005 report, Archer and Weir noted that research attention at that time was beginning to shift from the question of whether preschool was beneficial for children from disadvantaged backgrounds to the identification of those conditions under which preschooling is effective, or most effective. Despite "substantial disagreements" at the time about what comprised high quality preschool programmes, there was "emerging consensus" (Archer & Weir, 2005, p.8) on some of the elements of effective preschool interventions. Six of these were outlined by Archer and Weir (2005). First, **curriculum** was deemed to be important, with active learning (through play) believed to be more effective than didactic curricula. The authors noted that curricula for children from disadvantaged backgrounds should contain objectives relating to cognitive and language development, and that social development should also be promoted. Their report also noted that there was research evidence suggesting that a range of **parental involvement** activities contributed to the effectiveness of preschool for children's outcomes. Encouraging and facilitating parents to support learning and development in the home was singled out as particularly important. The importance of the quality of **adult-child interactions** in preschool settings was noted. Deemed to be particularly effective were preschool environments in which shared thinking is used for problem solving, for the clarification of concepts, etc. The importance of allowing children to initiate interactions and activities, and of challenging them, was also noted. **Classroom organisation** was also mentioned in the 2005 report. It was noted that a classroom setting that facilitates individual instruction and small group work had sometimes been suggested as a feature of an effective preschool programme. At the time of the publication of the 2005 report, there was consensus that the **duration** of preschool programmes was positively related to their effectiveness. However, as Archer and Weir (2005) noted, it was not possible from the research evidence available at that time to conclude whether the greatest impact would derive from starting preschool at a younger age, or by optimizing the number of hours of preschool attended per day, the number of days per year, etc. Finally, it was noted by Archer and Weir that the **professional qualifications of staff** had been highlighted as important by many researchers in the area. They specified an understanding of the curriculum, and of the ways in which children learn, as requirements of preschool staff. Additionally, potential benefits of involving local community members in paraprofessional capacities were highlighted.

Since the 2005 report, considerable strides have been made in adding to what is known about the conditions of effectiveness for preschool education. In 2013, a report commissioned by Ofsted, entitled *The Impact of Early Education as a Strategy in Countering Socio-Economic Disadvantage* was published (Pascal & Bertram, 2013). Among the report's aims were to identify those aspects of early education critical to improving outcomes for children from socio-economically disadvantaged backgrounds. The authors divided these into three aspects of early years policy and provision, noting the interrelated nature of the categories: *systemic factors* (those that are "shaped by the wider system in which early education is placed"), *structural factors* ("factors which shape the nature, scope and capacity of early education settings"), and *process factors* ("factors which determine how early education is experienced by those involved" (p.26)). This classification is used here to summarise recent evidence on factors influencing the effectiveness of preschool programmes.

In the first area, that concerning systemic factors, Pascal and Bertram (2013) argued for increased funding and investment in early years education in the UK, citing the strong economic returns that would result from such action. In 2016-2017, Ireland invested approximately 0.5% of GDP per year on early childhood care and education, falling short of the 1% recommended by UNICEF. Ireland's expenditure per student in pre-primary education is below the OECD average (OECD, 2017). UNICEF (2008) also recommended that children from disadvantaged backgrounds be given priority when countries are planning for early childhood education.

Assessing the quality of preschool programmes, evaluating their implementation, and assessing their impact, have been highlighted as critical features of preschool intervention with disadvantaged children (Pascal & Bertram, 2013; Schweinhart, 2013). It has been suggested that establishing mandatory quality standards, comprehensive regulation, and the effective and efficient collection, management, and analysis of data are mechanisms through which these can be achieved (Pascal & Bertram, 2013).

There is evidence from the United States and the United Kingdom that the most competent teachers do not work in settings with children from disadvantaged backgrounds (e.g. Peske & Haycock, 2006). In section 2 of this report, we saw how poorly planned reductions in class size may contribute to this problem, although other factors also impact on it. Pascal and Bertram (2013) suggest that manipulating the labour market to attract higher quality teachers (e.g. through pay incentives), may lead to better outcomes for disadvantaged children attending preschool.

In their examination of structural factors, Pascal and Bertram (2013) pointed out that there has, so far, been no definitive research outlining the ideal ratio of staff to children, or the optimal class size, in preschool settings. Existing research does suggest, however, that smaller classes and more favourable staff to child ratios are associated with preschool effectiveness, particularly in settings with children from disadvantaged backgrounds (Pascal & Bertram, 2013). UNICEF (2008) set a series of minimum standards for early childhood care and education settings. Among these was a minimum staff to children ratio of 1:15 in preschool education. The Perry Preschool Program, which has found some of the most strikingly positive results in relation to outcomes for disadvantaged children, had a staff to children ratio of 1:6. However, while smaller class sizes and more favourable adult:child ratios may facilitate effectiveness (e.g. by creating conditions to foster better interactions between children and staff), they are not sufficient to ensure them; the skills, knowledge and other attributes of the staff also appear crucial to programme effectiveness (Pascal & Bertram, 2013; Yoshikawa et al., 2013).

A substantial body of evidence points to staff qualifications and continuous professional development as crucial components of preschool quality (Schweinhart, 2013; Sylva et al., 2004). Pascal and Bertram (2013) noted the consensus that working in preschool education should not be viewed as a lower status or less-skilled job than teaching older children. Several studies have demonstrated higher preschool programme quality when preschool teachers have a Bachelor's degree and/or specialised training in early childhood education (e.g. Pianta et al., 2005; Schweinhart, 2013). As a minimum acceptable standard, UNICEF (2008) indicated that at least 50% of staff in preschool education settings should have at least three years of third-level education and have a recognised qualification in early childhood studies, or similar. Research has found preschool settings with high concentrations of children from low-income families to be characterised by lower instructional quality than other contexts (e.g. Pianta et al., 2005), and so preservice and in-service training might be particularly important in such settings.

Another feature of preschool design posited to be related to effectiveness is that of dosage, i.e., the amount of the intervention received by the child (Wen, Leow, Hahs-Vaughn, Korfmacher & Marcus, 2012). Dosage has been assessed in a number of ways, such as duration (typically, whether one year or two years of preschool are received), intensity (e.g. whether the programme runs on a half-day or full-day basis) and average percentage attendance or ratio of days attended to days expected (Wen et al., 2012). On the whole, the available evidence suggests that greater exposure to preschool is associated with greater benefits (Arteaga, Humpage, Reynolds & Temple, 2014), with more studies

focusing on the effects of programme duration than on other indicators of exposure. These studies, conducted with children from low-income families, have demonstrated that students experiencing two years of preschool significantly outperform others on tests of reading, mathematical reasoning, teacher-reported academic performance, and measures of social outcomes when assessed at the end of their preschool experience (Domitrovich et al., 2013; Wen et al., 2012). In addition to these short-term outcomes, research has shown that children who experience two years of preschool are significantly less likely to receive special education and are less likely to commit crimes in later life than children who attend preschool for just one year (Arteaga et al., 2014).[4] Reynolds et al. (2014) investigated the associations between full-day and part-day preschool attendance and a range of school readiness outcomes. They found that children who attended for full days had significantly higher scores on measures of language, mathematics, socioemotional development, and physical health than their part-day counterparts; differences in literacy and cognitive scores were not significant. The children attending full days also had significantly fewer absences, but did not differ from their part-day peers in levels of parental involvement (Reynolds et al., 2014).

Research evidence is mixed on whether a direct instruction approach or an active learning/ play-based approach is more effective for ensuring positive cognitive and social outcomes of preschool. A meta-analytic study by Camilli et al. (2010), for example, found that largest effect sizes in terms of gains on cognitive tests were associated with preschool programmes that contained a direct instruction component. This meta-analysis included in its remit studies from 1960 to 2000. Most of the included studies that emphasised direct instruction were older, and pre-dated the shift away from more didactic approaches towards more active learning and play-based approaches that has characterised the prevailing consensus as to best practice among those working in the early years sector in recent times. However, earlier studies on preschool effectiveness also tended to be evaluations of programmes targeted at children from disadvantaged backgrounds, while newer studies included in the meta-analysis catered to more diverse populations of children. As previously mentioned, larger effects of preschool have repeatedly been observed amongst children from low-income families than those seen amongst their more advantaged peers. As such, it is difficult to ascertain whether the larger effect sizes seen in these earlier preschool evaluations are attributable to the pedagogical approach adopted, or merely a function of the populations served by these programmes.

[4] Although the one-year and two-year groups in these studies were matched on a range of sociodemographic characteristics, the one-year vs. two-year condition was not randomly assigned.

Yoshikawa et al. (2013) make a distinction between "global" preschool curricula, which are broad in scope and aim to promote language, literacy, numeracy, and socioemotional development, as well as knowledge of science, arts, etc., and what Yoshikawa et al. (2013) term "developmentally focused" curricula which adopt a more focused scope, and aim to provide more intensive instruction in a given curriculum area. Yoshikawa et al. (2013) note that existing evidence on global curricula indicates no or small effects of these curricula on a range of outcome measures. By contrast, moderate to large effects have been found for curricula targeted at specific areas (e.g. at language and literacy, at mathematics, at improving socioemotional skills), when added to a global curriculum that is already established.

A final structural factor, that of parents' involvement in the preschool education of their children, has been posited as an important feature of preschool effectiveness (Schweinhart, 2013). Schweinhart (2013) argues that one of the factors associated with the larger effects of smaller, model preschool programmes such as the *Perry Preschool Project* than those observed in, for example, Head Start, is that the former place great emphasis on engaging parents as part of the preschool education of their children. Grindal et al. (2013) used meta-analytic techniques to ascertain whether adding a parenting component to preschool programmes could increase the effectiveness of these programmes. They found that merely providing parents with information through classes or workshops did not enhance the effects of preschool. However, programmes that provided modelling of responsive and/or cognitively stimulating interactions with children, allowed parents opportunities to practise such interactions, and provided them with feedback on this practice, produced larger effects than preschool programmes that did not offer such support to parents (Grindal et al., 2013).

Finally, two kinds of process factors were found to be related to preschool effectiveness: the nature of the adult-child interaction; and training the education providers to cater for diverse learning needs. Consistently, studies have shown that the quality of the interactions between children and staff in preschool education settings is among the most important aspects of preschool education (Pascal & Bertram, 2013; Yoshikawa et al., 2013). Studies have demonstrated that interactions that are both stimulating and sensitive are predictive of children's later academic achievement (e.g. Burchinal et al., 2008). Yoshikawa et al. (2013) argue that there are two dimensions of teacher-child interaction that are most closely related to preschool children's outcomes. First, interactions that promote higher-order thinking skills and explicitly support learning in various content domains are

associated with gains in areas such as language and mathematics. Second, interactions that are characterised by warmth and responsiveness and that involve shared thinking in order to solve problems and elaborate on a particular topic contribute to children's learning and development (Sylva et al., 2004; Yoshikawa, 2013). Children should also have opportunities to direct their own learning and to take initiative. An equal number of staff-initiated activities and child-initiated activities characterised the most effective preschool settings in the EPPE study (Sylva et al., 2004).

Studies have also demonstrated that preschool settings that provide high-quality learning environments with respect to diversity (e.g. through training and planning for diversity as it relates to gender, race, individual learning needs), are associated with better outcomes for children (e.g. Sylva et al., 2004).

**Conclusion**

The existing body of evidence suggests that provision of preschool education offers huge promise as a means of reducing the achievement gap between children experiencing educational disadvantage and others. Preschool can also lead to a range of longer-term outcomes that extend beyond educational attainment and into well-being throughout the life course. However, it is also clear from the existing literature that the most powerful results accrue from high-quality programmes. If informed, evidence-based policy decisions are made with respect to the systemic, structural, and process factors associated with preschool education, then such early education may have an important role in combatting educational disadvantage.

## 4. Professional Development

In an education setting, professional development comprises activities, experiences and processes that enhance teachers' knowledge, beliefs and understandings. Effective professional development should result in enhanced student achievement through changes in teachers' cognitions (knowledge, beliefs and attitudes) and practices. As a mechanism for teacher change, the potential of professional development in addressing disadvantage is recognised. As such, it has formed part of comprehensive approaches to educational inclusion such as the No Child Left Behind Act of 2001 in the United States, and DEIS in Ireland. Conventional wisdom suggests that teacher professional development is beneficial, but what actually works, and under what conditions is professional development most effective?

In their 2005 review, Archer and Weir identified few studies that provided evidence for the impact of professional development on teaching practice. Indeed, the literature suggested that teachers can be slow to change their practice following professional development (Ehrenberg, Brewer, Gamoran & Willms, 2001). In terms of effectiveness, the sparse research that existed had produced contradictory and inconsistent findings, and few studies linked professional development directly to student achievement. Nonetheless, six components of professional development associated with changes in teaching practice were identified: study groups or networking (rather than workshops and conferences); longer duration (hours spent and timespan of activity); collective participation of teachers from the same class, grade or school; active involvement by teachers in analysis of teaching and learning; a focus on subject content knowledge; and coherence between the activity, teacher and school goals, and state priorities (Porter, Garet, Desimone, Yoon & Birman, 2000). The research linking professional development to student achievement indicated that activity that focused on higher-order thinking skills and teaching special populations was significantly related to student achievement, while the amount of time spent on such activities did not seem to matter (Wenglinksky, 2002).

Over the past decade, researchers have intensified efforts to understand what high-quality professional development should consist of and how it should be delivered, as well as the efficacy of professional development in achieving the desired student and teacher outcomes. In doing so, a range of approaches have been adopted, from experimental studies to qualitative explorations and systematic reviews. However, despite increased attention to the topic in the literature, the elements of professional development that lead to enhanced student achievement are still not well understood. Some say robust scientific evidence of what works is still lacking (e.g., Guskey, 2014;

Hill, Beisiegel, & Jacob, 2013), yet others propose that research has led to a consensus on the main characteristics of effective professional development (e.g., Desimone, 2009; Penuel, Fishman, Yamaguchi, & Gallagher, 2007).

**Characteristics of Effective Teacher Professional Development**

Within the literature, there is some consensus concerning five of the six components of effective professional development identified by Archer and Weir (2005). Research indicates that professional development that involves content focus, active learning, coherence, adequate duration and collective participation is associated with teacher change (and also student achievement), across subjects (e.g., Blank, de las Alas, & Smith, 2008; Desimone, 2009; Garet, Porter, Desimone, Birman, & Yoon, 2001; Wayne, Yoon, Zhu, Cronen, & Garet, 2008; Yoon, Duncan, Lee, Scarloss, & Shapley, 2007). While great variability exists in the design and delivery of professional development activities, research suggests that it is such features, rather than the form (e.g., workshop, or seminar) that contribute to desirable teacher and student outcomes (Desimone, Porter, Garet, Yoon, & Birman, 2002; Garet et al., 2001). The five features are described below.

Effective professional development tends to be **content focused**, incorporating not only what is taught, but also pedagogical content knowledge (Shulman, 1986), or how students learn the subject content (Blank et al., 2008; Desimone, 2009; Yoon et al., 2007). Indeed, pedagogical content knowledge is considered the most important feature of effective professional development (Desimone, Smith, & Philips, 2013). Professional development incorporating content focus can enhance teachers' knowledge and practice, and can impact student achievement (Blank et al., 2008; Yoon et al., 2007). A widely cited systematic review of over 1,300 impact studies of professional development in reading, mathematics and science identified only nine studies meeting rigorous research standards and demonstrating positive effects on student achievement, and all involved activities that directly focused on enhancing both content and pedagogical content knowledge (Yoon et al., 2007). A further study, in which 21 studies of professional development in mathematics and science were analysed, found that interventions containing both content and pedagogical components had larger impacts on student achievement than interventions containing either component alone (Scher & O'Reilly, 2009).

Effective professional development tends to involve some form of **active learning** (Desimone, 2009). This can occur, for example, through observation, analysis, reflection, and feedback on one's own and others' understandings and practices, and reviewing and assessing students' work individually

and collaboratively. Active learning in professional development is positively associated with changes in teacher knowledge and practice (e.g., Garet et al., 2001; Ingvarson, Meiers, & Beavis, 2005). Research further indicates that professional development that combines both content and active learning components is more effective than professional development that focuses on either component alone (Heller, Daehler, Wong, Shinohara, & Miratrix, 2012).

Research suggests that professional development should be **coherent**, integrating with, and building upon, teachers' existing knowledge and skills, and should be aligned to policy and reform measures at the school, local, and national levels (Desimone, 2011). Further, professional development should promote 'sustained professional communication' between teachers engaged in similar development processes (Desimone, 2011, p. 65). Coherence has been linked to enhanced teacher knowledge, skills, and practice (Desimone et al., 2002; Garet et al., 2001; Penuel et al., 2007). It can enable changes to be integrated with practice (Desimone, 2002) and may help sustain changes made to practice (van Driel, Meirink, van Veen, & Zwart, 2012). However, to be coherent, professional development should meet differing needs across teachers and classrooms (Desimone, 2011). Providing differentiated support through mentoring and coaching is one means of linking new strategies to everyday classroom contexts (Grierson & Woloshyn, 2013).

Research suggests that **duration** matters, and that intense and/or sustained professional development has the most potential to effect teacher change and impact student achievement (Timperley, Wilson, Barrar & Fung, 2007; Yoon et al., 2007). The number of professional development hours is positively associated with improvements in teaching practice (e.g., Banilower, Heck, & Weiss, 2007; Heck, Banilower, Weiss, & Rosenberg, 2008) and student achievement (Yoon et al., 2007). Of the nine rigorous studies (of professional development across subjects) identified by Yoon et al. (2007), six entailed thirty hours or more (the range was 30-100 hours) of professional development and all six had a significant positive effect on student achievement. Yoon et al. found that an average of 49 hours professional development over six to 12 months increased student achievement by 21 percentile points on average. It also appears that longer-term engagement, together with follow-up activity, is more effective than 'one-shot', short term activities (Blank et al., 2008; Desimone, 2009; Timperley et al., 2007; Scher & O'Reilly, 2009; Yoon et al., 2007). Further, research suggests that **frequency of contact** matters as well as an extended duration. Timperley et al. (2007) found contact frequency was particularly important for professional development in reading, writing and science, with most studies reporting a frequency of at least every two weeks.

Research has shown a positive relationship between collective participation and both teaching practice (Desimone et al., 2002; Penuel et al., 2007) and student achievement (e.g., Chung-Wei, Darling-Hammond, Andree, Richardson, & Orphanos, 2009; Timperley et al., 2007; Vescio, Ross, & Adams, 2008). **Collective participation** should involve active learning within collaborative learning communities focused on both teaching practice and student achievement (Chung-Wei et al., 2009; Timperley et al., 2007). According to Timperley et al. (2007), this should be supported by the use of students' work and high, but realistic teacher expectations. More detail on the role of expectations as they impact on student achievement is available in Section 7 of this report. Timperley et al. also concluded that the location of the activity (on- or off-site, meaning in school or elsewhere) is less important than participation in a professional learning community, and that professional development should be facilitated by outside experts. Further research has identified a strong focus on student learning and achievement as the key aspect of professional learning activities as far as impacting student learning outcomes is concerned (Vescio et al., 2008).

**The Impact of Professional Development on Teacher Change and Student Achievement**

Studies have found significant effects of professional development on teacher cognitions and/or practices (e.g., Desimone, Smith, & Philips, 2013; Garet et al., 2008; Gersten, Dimino, Jayanthi, Kim, & Santoro, 2010). However, these effects have not always been associated with student achievement gains. Studies attempting to demonstrate a causal link between professional development and student achievement are sparse and have had revealed mixed outcomes. Only six of the nine studies identified by Yoon et al. (2007) revealed significant positive effects on student achievement. A key challenge is to be able to take account of the myriad causal links that may exist between professional development and student achievement, and the time needed for these to manifest themselves (Wayne et al., 2008). However, reviews of the evidence across subjects (Timperley et al., 2007; Yoon et al., 2007) and for single subjects (e.g., Blank et al., 2008; Gersten, Taylor, Keys, Rolfhus, & Newman-Gonchar, 2014; Slavin, Lake, Chambers, Cheung, & Davis, 2010) have identified rigorous studies demonstrating positive impacts of professional development on student achievement. Ideally, well-designed and executed studies linking professional development to student achievement through teaching practice can provide the strongest evidence for their proposed relationship. In one example, Heller et al. (2012) conducted an experiment examining the impact of moderate duration (24 hours) professional development for elementary science teachers on teacher knowledge and on student achievement. They found that test scores of teachers who received the interventions, and those of their students, were higher than controls post-intervention and that the effects were even stronger at one year follow-up.

Recently, the literature has addressed indirect, or 'spillover', effects (Angelucci & DiMaro, 2010) of professional development. Spillover effects may result when teachers interact (formally and/or informally) with colleagues who have participated in professional development, leading to the diffusion of learning and practices among them (Sun, Penuel, Frank, Gallagher, & Youngs, 2013). Empirical support for this diffusion effect comes from an experiment by Sun et al. (2013), which demonstrated enhanced teaching practice for teachers who received help and support from colleagues who directly participated in professional development. Such findings imply that, while professional development should aim to promote teachers' knowledge and practice, it should also aim to promote opportunities for collaboration, and to develop teachers' ability to collaborate with others (Sun et al., 2013; Weissenrieder, Roesken-Winter, Schueler, Binner, & Blomeke, 2015). However, more research is required to understand the mechanisms involved in diffusion before any definitive conclusions can be drawn.

As Yoon et al. (2007) point out, the evidence suggests that professional development may change teachers' cognitions and practices, but it does not necessarily follow that there will be a resulting enhancement of student achievement. If, for example, a teacher fails to apply learning to practice, then impacts on student achievement are unlikely to occur. Teacher change is complex, and a range of contextual factors can affect the relationship between professional development, teacher change, and student achievement (Desimone, 2009; Guskey & Yoon, 2009; King, 2014). Furthermore, some contextual factors have been found to be important at the school, teacher, and student levels.

**Contextual Factors**

In terms of school context, evidence suggests that leadership is a major factor that impacts positively on student learning, and that leadership effects are greatest in underperforming schools (Leithwood, Seashore-Louis, Anderson, & Wahlstrom, 2004). An important role for school leaders lies in fostering a shared vision for improved student outcomes, and providing, promoting and sustaining engagement in professional development (Timperley et al., 2007).

With regard to teacher factors, teachers' attitudes and beliefs about their own, and their students' abilities, have been shown to mediate between professional development and improvements in practice (Banilower et al., 2007; Heck et al., 2008). Research suggests that changes in teachers' attitudes do not necessarily precede changes in their practice, but instead can arise from changes in practice (Guskey, 1985; Ingvarson et al., 2005). For example, teacher expectations and teacher efficacy can be enhanced through professional development, when teachers see improvements in

their students resulting from their own participation in development activities (e.g., Ingvarson et al., 2005; Timperley & Philips, 2003; Timperley et al. 2007). This finding is particularly relevant in the context of later material on teacher expectations. Timperley and Philips (2003) also conceive of teacher change occurring in learning cycles. This implies that professional development should be continuous and involve active learning approaches in order to support this process.

In terms of student factors, evidence suggests that teacher professional development can have particular benefits for lower-achieving students and students from disadvantaged backgrounds (e.g., Jackson & Ash, 2012; Johnson, Kahle, & Fargo, 2007; Kennedy, 2010; Lee, Deaktor, Enders, & Lambert, 2008; Timperley & Parr, 2007). For example, Lee et al. (2008) found a three year professional development intervention for elementary science teaching narrowed the gap in achievement among cultural, linguistic and socio-economic demographic student subgroups. In another study, Timperley and Parr (2007) found that a national professional development programme addressing literacy produced gains for all students beyond those expected, with the largest gains observed among the lowest achieving 20 percent of students.

**Conclusion**

The proliferation of research on teacher professional development over the past decade has advanced its understanding, while highlighting its complexity. Although the relationships between professional development, teacher change, and student achievement are complex, rigorous empirical studies, though sparse, have demonstrated that professional development can have significant positive effects on teachers' cognitions and practices, and on student achievement. This is most likely to occur when activities characterised by active learning, content focus, optimal duration, coherence and collective participation are applied to the specific context in question. Professional development has the potential to enhance student achievement and narrow achievement gaps. This suggests that targeting high-quality professional development activities at teachers serving students from disadvantaged backgrounds may have success in the promotion of educational equity and inclusion.

# 5. Parental Involvement

The degree to which parents take an active role in their children's education has been the topic of much research in recent decades. The focus of the current review is on updating the research evidence on parent involvement in the context of educational disadvantage, since the earlier review by Archer and Weir (2005).

Parental involvement has been defined in many ways in the research literature. One of the most prominent researchers in the field, Joyce Epstein, identified six main types of parent involvement: parenting, learning at home, communicating, decision-making, volunteering, and collaborating with the community (Epstein & Sheldon, 2006). Another prominent researcher in the field, William Jeynes, defined parent involvement as "parental participation in the educational processes and experiences of their children" (Jeynes, 2007, p. 83). While Epstein's research suggests that deliberate actions by the parent such as attending school functions, helping children with their homework, and maintaining household rules characterise engaged parents (Epstein 2001; Henderson & Mapp, 2002 cited in Jeynes, 2011), research based on meta-analyses by Jeynes (2005, 2007) suggests that the more subtle aspects of parent involvement, such as maintaining high expectations of children, communication with children and parental style, have more beneficial impacts on educational outcomes for children than overt expressions of parent involvement.

The term 'parental expectations' refers to "the degree to which a student's parents maintained high expectations of the student's ability to achieve at high levels" (Jeynes, 2007, p.89). Parental style is defined in Jeynes' research as "the extent to which parents demonstrated a supportive and helpful approach" (Jeynes, 2005, p. 246). Of the specific aspects of parent involvement assessed by studies included in the meta-analysis, parental expectations yielded the largest impact on academic achievement, and are considered to be important for children at all points on the educational spectrum, from primary to post-primary level (Jeynes, 2005, 2007). Research has also revealed that communication is an important aspect of parent involvement, defined as the extent to which parents and their children communicate about school activities and report a high level of communication overall (Jeynes, 2005, 2007). However, it was noted that the impact of communication on achievement may not be as significant as that of expectations (Jeynes, 2011). While traditional measures of parent involvement, such as attendance at school functions, are not as powerful predictors of academic achievement as the more subtle aspects of parent involvement, an exception is parental reading to the child, which has been identified as an important predictor of academic outcomes (e.g. Jeynes, 2007).

Results from meta-analytic research also confirm the significant relationship between parent involvement programmes and academic achievement, both for younger and older students (preschool through to adolescence). The types of parent involvement programmes shown to be effective in terms of the academic success of students include shared reading programmes, programmes that emphasise partnership between parents and teachers, communication between parents and teachers, and programmes that advocate checking homework (Jeynes, 2012). Furthermore, research suggests that schools need to operate under certain conditions to more completely involve parents. For example, the degree to which teachers, principals, and school staff are encouraging and supportive of parents may be more important than specific guidelines and instruction offered by schools to parents (Mapp et al, 2008; Sheldon, 2005, cited in Jeynes, 2011).

Parent interventions aimed specifically at disadvantaged children and their families have been reviewed recently for the Nuffield Foundation in the UK (see & Gorard, 2013). The findings of the review echo the view of policy-makers and practitioners that early intervention with disadvantaged children is more effective than later intervention The authors of the review noted a dearth of high-quality evidence in research on the area of parent involvement interventions for disadvantaged groups, but noted that those studies that did provide the best evidence occurred in the pre-school and preparation for primary school phase. However, See and Gorard (2013) cautioned that there is no clear evidence that parental involvement interventions for pre-school children *per se* are effective. In their review, See and Gorard (2013) found that the most effective programme with long-term results— The Chicago Child-Parent Centre (CPC) Program (already mentioned in relation to preschool in Section 3 here) — mixed parental involvement with a range of other intervention elements. As the CPC is a multi-component strategy, with parent involvement representing only one element of the intervention, it is therefore not possible to conclude that the parent involvement component in particular exerted an impact. The authors did stress that those interventions most likely to succeed are those aimed at young children, involve parent training and continuing support to parents, and emphasise collaboration between parents with teachers.

See and Gorard (2013) also pointed out: “there is very little evidence of promise from evaluations of parental interventions for children of later primary age, secondary age or across phases of schooling” (p.80). Furthermore, the review concludes that there is no evidence to suggest that the following activities influence attainment for disadvantaged school children: parental participation in school events (such as parent-teacher evenings or parent-teacher associations), cake sales and other fund-raising events, programmes that merely encourage parents to work with their children at home (without direct support or skills training), programmes aiming to improve parent-child relationships, or programmes aimed at encouraging parents to work on computers with their children. On the

other hand, Hoover-Dempsey and Sandler (e.g. 1995), argued that *any* parental involvement activity is potentially important, as it models to the child that the school is important and worthy of adult time (even volunteering activities, attendance at meetings, etc.). This may be particularly important in schools catering for concentrations of students from disadvantaged backgrounds.

**Conclusion**

The earlier review by Archer and Weir (2005) found that parent involvement can be increased among disadvantaged groups through home visits, sometimes in conjunction with a pre-school centre, and through increasing family involvement in homework and enhancing parents' skills through workshops. The current review supports this finding. Specifically, it suggests that a multifaceted approach, in which the education of parents is supported, and which features a school-based parent involvement element, and that begins early in a child's life, is most effective. Archer and Weir also stressed the importance of involvement of parents in the classroom as teaching aides, being consulted on policy matters, serving on management boards, and by participating in out- of-school activities and fund raising. While this review noted that research had failed to provide clear-cut evidence that participation in school events or fundraising is beneficial for children's academic achievement, it is likely that the such activities could be used as a means of engaging parents with the school and, hence, of increasing their level of participation in other activities which do benefit children's achievement. Although not the primary focus of this review, it is also important to acknowledge that parental involvement activities may have also have positive effects for a range of non-achievement outcomes such as school attendance, socio-emotional adjustment and parent-child relations.

## 6. Summer Learning Programmes

That an achievement gap exists between economically advantaged and disadvantaged children when they start school, and that this gap persists over time, have been well established. While there are undoubtedly many reasons for the existence of the achievement gap, some research has suggested that children from economically disadvantaged backgrounds are more likely to fall behind their more advantaged counterparts during the summer months (Heyns, 1978; Kim & Quinn, 2013). Evidence exists that the reading and mathematics achievement of students in general declines over the summer break. This phenomenon has variously been termed 'summer setback', 'summer learning loss' and 'summer slide'. However, many studies have shown that for reading in particular, the magnitude of achievement losses is strongly associated with family socioeconomic status (e.g. Borman, Benson & Overlman, 2005; Burkam, Ready, Lee and LoGerfo, 2004; Cooper, Nye, Charlton, Lindsay & Greathouse, 1996). As such, it appears that differences in summer learning rates contribute to the income-based disparity in student reading achievement.

A number of studies have estimated the impact of summer learning loss and explored its relationship to family socioeconomic status. Cooper et al. (1996) conducted a meta-analysis of studies assessing the effects of summer learning setback. They reported that, overall, summer learning loss equated to the loss of approximately one month's instruction. They found that while the effects were greater for mathematics (approximately 2.6 months of grade-level equivalency) than for reading, there was no differential effect by socioeconomic status on mathematics achievement. In contrast, children from middle class backgrounds experienced (non-significant) reading gains over the summer break, while children from low-income families experienced significant losses in reading over the same period (Cooper et al., 1996).

More recently, the cumulative effects of differential summer learning rates have been documented. Alexander, Entwisle and Olson (2007) examined data from the longitudinal *Beginning School Study*, which began in 1982 and tracked the educational achievements of a representative random sample of children in Baltimore from first grade to age 22. In line with previous research on summer learning loss, they found that children from higher- and lower-income families made similar achievement gains during the school year, but that disadvantaged children fell significantly behind their more advantaged peers in reading over the summer months. By the end of fifth grade, Alexander et al. (2007) found disadvantaged children to be the equivalent of nearly three grade levels behind their more advantaged counterparts in reading. Alexander et al. (2007) further reported that at ninth grade, approximately one-third of the achievement gap between economically disadvantaged and advantaged children was attributable to disparities existing when children first started at school,

with the remaining two-thirds attributable to the cumulative effects of differences in summer learning.

Several explanations for the summer learning loss gap have been suggested. Entwisle, Anderson and Olson (2001) proposed what has been called the 'faucet theory'. They argued that when school is in session, the resources 'faucet' is turned on for all students, and all students benefit equally from these resources. Over the summer break, however, the faucet is turned off, and socioeconomically disadvantaged families are less able to compensate for the loss of the school's input than are more advantaged families.

Borman et al. (2005) discussed four additional models that have been proposed to explain the social stratification observable in summer learning patterns in reading. These models are not mutually exclusive and there is clear overlap between their features. The 'investment model' has its roots in economic theory (e.g. Becker, 1981), and suggests that parents invest 'human wealth' (time, skills, abilities) and 'inhuman wealth' (income, goods, services) into their children's development. This theory holds that the more resources parents have, the larger the investment they make in their children's development, and that the larger the investment, the better for children's academic achievement (Borman et al., 2005).

Second, some have attributed differential summer learning rates directly to differences in activities engaged in by children over the summer break, suggesting that the extent to which children engage in summer activities that are supportive of academic achievement is related to family income levels. Gershenson (2013), for example, found summer time-use to vary by socioeconomic status. Among his findings was that children from low-income homes spent close to two more hours each day during summer break watching television than their more advantaged counterparts. Multiple studies have reported strong negative associations between television watching and student achievement, including in Ireland (e.g. Kavanagh, Shiel & Gilleece, 2015). Additionally, Bianchi and Robinson (1997) found that children from higher-SES families spent significantly more time reading than did their peers from less advantaged backgrounds (although they did not examine summer-specific engagement in activities). Time spent reading outside of school has frequently been found to be related to reading achievement (e.g. Kavanagh et al., 2015. Similarly, Burkam et al. (2004) found that, during the summer, low-SES children were less likely to read books or have books read to them, made fewer visits to the library or to book shops, engaged in fewer activities such as dance, music, and sport, made fewer trips to museums, zoos, etc., and spent twice as much time watching television than did their high-SES counterparts. However, Burkam et al. (2004) also found that SES

differences in summer learning were only modestly explained by the activities in which children engaged over the summer break.

A third model implicates differences in parent practices in the summer learning loss gap. As outlined in the parental involvement section of this report, certain parental involvement activities have repeatedly been shown to be supportive of children's academic achievement (e.g. Fan & Chen, 2001; Jeynes, 2005). The nature and extent of these behaviours tend to vary by sociodemographic characteristics of the parents, such as their educational attainment, gender, and income levels (Hill & Taylor, 2004). During the summer months, opportunities for such parent practices to be enacted may be increased in line with children's increased levels of free time.

Finally, the importance of parents' psychological resources in influencing differential summer learning rates has been posited. Children whose parents have high expectations for their children have been found more likely to engage in summer activities that are supportive of their achievement and in parental involvement activities associated with higher achievement; such high expectations are found less frequently among parents of disadvantaged children (Entwisle et al., 1997).

Regardless of the factors leading to summer learning loss, its existence prompted researchers to turn their attention to turn to the issue of combatting it. Intuitively, it would seem likely that implementing summer programmes which promote learning should ameliorate the problem. Cooper, Charlton, Valentine and Borman (2000) reported the results of a meta-analytic and narrative review of evaluations of 91 such programmes. They concluded that summer programmes (with either a remedial or accelerated focus) had positive effects on student achievement, that larger effects of remedial programmes were seen when the programme was small and featured individualised instruction, and when the programme required parental involvement. They also found that the largest effects were seen in the earliest grades and at post-primary level (as opposed to the middle school grades). Of particular relevance to the current review was their conclusion that, although all students benefit from summer learning programmes, children from 'middle class' backgrounds benefit significantly more than disadvantaged children. Despite this early attempt to estimate the impact, if any, of implementing summer learning programmes, Borman et al. (2005) characterised the evidence base surrounding the effectiveness of summer learning programmes as being of low quality, arguing that few rigorous studies had adequately examined the potential of summer intervention to counteract summer learning loss.

Several years later, Kim and Quinn (2013) conducted a meta-analytic study focusing on studies of summer reading interventions conducted between 1998 and 2011 (i.e. from the point that Cooper et al.'s (2000) review stopped). They included in their meta-analysis studies of both classroom-based

and home-based summer programmes. Their study was designed to test three hypotheses. First, that home-based and classroom-based summer reading interventions would lead to improved reading outcomes. Second, that there would be a moderating effect on reading outcomes of implementing *research-based* instructional strategies. Third, they hypothesised that intervention effects would be greater for students from low-income families than for those of middle- or high-income parents (Kim & Quinn, 2013). Each of these hypotheses was supported by their meta-analytic findings. Both classroom- and home-based interventions had significant positive effects on a composite measure of reading achievement. The authors explored the potential effects of publication bias and found that studies published in peer-reviewed journals (31% of studies included) reported effects that were not significantly different to those in unpublished studies (40% of the included studies were dissertations). Kim and Quinn found that, overall, effect sizes were larger for reading comprehension than for reading vocabulary. Classroom-based interventions that did not utilise research-based instruction had smaller effect sizes than those that did. Finally, Kim and Quinn (2013) found significantly larger effect sizes for low-income groups than for mixed-income samples, thus contradicting Cooper at al.'s (2000) finding of larger effects of summer programmes for middle-income children than for low-income students. Quinn, Lynch and Kim (2013) hypothesised that the contradictory findings may result from the fact that the Cooper et al. (2000) meta-analysis combined reading and mathematics outcomes, whereas Kim and Quinn (2013) had focused solely on reading. As mentioned earlier, several earlier studies (e.g. Cooper et al., 1996) had demonstrated different summer learning patterns for reading and mathematics, with social stratification evident in relation to summer loss in reading achievement, but not for mathematics achievement.

Kim and Quinn (2013) did not test the hypothesis that classroom-based and home-based summer learning programmes would have different effects on outcomes. However, they and others (e.g. McCombs et al., 2011) have argued that classroom-based programmes may improve a range of additional outcomes (e.g. behavioural, social, nutritional, safety) in a way that would not be expected of home reading programmes. Additionally, Kim and Quinn found the largest effect sizes associated with the most resource-intensive classroom-based interventions (i.e. those with 13 children or fewer, those with 4 to 8 hours daily instructional time, and those with 70 to 175 hours total programme time). Terzian, Moore and Hamilton (2009) summarised the characteristics of effective summer programmes (the authors argue that these are best characterised as *promising* approaches, given the limited number of programmes evaluated experimentally), based on available experimental evidence. These include: making learning fun (by supplementing academic instruction with recreational activities); embedding learning in real-world contexts; including hands-on

activities; complementing the school curriculum; employing qualified staff; and operating small class sizes (Terzian et al., 2009).

While the largest effects might be expected from classroom-based summer programmes using research-based instructional techniques delivered by qualified and well-trained teachers, there is also evidence for the effectiveness of less expensive and less resource-intensive interventions. Allington et al. (2010) conducted a longitudinal experimental study which tested the hypothesis that providing books to children would guard against summer reading loss among disadvantaged students. To this end, a randomly-selected sample of students from 'high poverty' schools were provided with a supply of self-selected books on the last day of school for each of three school years, while another sample of students from the same schools were assigned to a control condition (i.e. they received no books). The provision of books in this way constituted the entirety of the intervention. A statistically significant effect on reading outcomes was found for the provision of access to books. Larger effects were found when the researchers compared the reading achievement of the most disadvantaged children in the control and treatment groups.

Kim and White (2008) conducted an experimental study on a voluntary reading programme with children in Grades 3 to 5. Participating students were assigned to one of four conditions: control, receipt of books only, books with oral reading scaffolding[5], and books with oral reading and comprehension scaffolding. They found that children in each of the two scaffolding conditions had higher posttest reading scores than those in the control condition. They also found that children in the two scaffolding conditions combined scored significantly higher at posttest than children in the books only and control condition combined. Training parents to scaffold their children's reading during the summer may have significant benefits for children's reading outcomes above and beyond the mere provision of books.

**Future Research**

Since Borman et al.'s (2005) characterisation of the evidence base surrounding the efficacy of summer learning programmes as being of 'poor quality', considerable strides have been made in strengthening it. However, following a review of the literature, McCombs et al. (2011) outlined a number of ways in which it could be further usefully expanded. First, they called for randomised control trials (RCTs) of summer learning programmes designed to maximise attendance and to compare treatment and control outcomes over multiple years. Second, they recommended that

[5] Meichenbaum and Biemiller (1998) define scaffolding as "the practice of providing just enough assistance (not too much or too little) to help students succeed." (p.141).

studies be conducted that assessed effects on outcomes beyond academic achievement, including secondary academic outcomes (such as school attendance and graduation rates) and non-academic outcomes (such as reduced participation in crime/delinquency, improved nutrition, etc.). Third, they called for research that assessed the impact of participation in consecutive years of summer learning programmes on a range of outcomes. Finally, they acknowledged the need for research on the cost-effectiveness of summer learning interventions. Following the current review of the literature, it appears that these aims remain largely unmet.

**Conclusion**

Family income disparities influence the magnitude of losses in reading achievement over the summer months. Evidence exists that summer learning programmes can mitigate such losses and, while earlier research indicated otherwise, it now appears that disadvantaged children benefit most from such intervention. There is evidence for the efficacy of mandatory and voluntary classroom-based summer programmes. However, not all summer learning programmes have benefits; programme quality and attendance are crucial components of successful programmes (Mc Combs et al., 2011). In terms of programme quality, a number of programme characteristics, such as small classes, parent participation, and individualised instruction appear to be important. Other promising features/practices include aligning the content in the summer programme with the regular school year curriculum (McCombs et al., 2011). Given weaknesses and gaps in the evidence base, particularly the dearth of rigorous, longitudinal evaluations of summer learning programmes with large groups of lower-SES students, summer programmes with the aforementioned features can be best characterised as a promising means of reducing the achievement gap between disadvantaged students and their more advantaged counterparts. It is acknowledged that the high-quality classroom-based programmes which show the most promise are resource intensive and that their implementation may present practical challenges. However, evidence for the efficacy of home-based summer reading programmes also exists. Such intervention could represent a more cost-effective means of tackling summer learning loss, though the benefits would likely be more limited in scope and magnitude. Whichever approach is taken, efforts to reduce summer learning loss may be an important step towards the goal of reducing the achievement gap.

## 7. Teacher Expectations

In their review of the international literature in 2005, Archer and Weir summarised the extensive body of research on the relationship between teacher expectations and student outcomes. They pointed to the long-established finding that, in classrooms, naturally occurring high expectations are usually associated with higher pupil achievement and low expectations with poorer achievement (Good, 1987). However, it is not the holding of differential expectations for individual students *per se* that may have negative impacts, but rather the behaviours that teachers may adopt with students for whom they hold low expectations: these students may be presented with fewer opportunities to learn (for example, by being asked fewer and less challenging questions, afforded less time to respond, and given poorer quality feedback) (Cotton, 1989). Teacher expectations have been described as leading to 'sustained' expectation effects or to 'self-fulfilling prophecy' effects. The former arise when teachers expect students to maintain previously developed behaviour patterns and assume these patterns are permanent. Examples include teachers failing to notice or ignoring changes that are inconsistent with previous patterns, and assigning students to particular streams or ability groups. Self-fulfilling prophecies, by contrast, always involve the notion that initial misjudgements about students lead to changes in those students that are consistent with teachers' expectations (Weinstein, 2002). It should be noted that sustained expectations and self-fulfilling prophecies may have both negative and positive consequences, as responses to expectations that are low and high respectively. In the context of the current review, both are important.

In their review of 35 years of research on teacher expectations, Jussim and Harber (2005) maintained that there was evidence for the following conclusions: Self-fulfilling prophecies do occur, but their impacts are typically small and there is no evidence that they accumulate over time; teacher expectations may predict student outcomes more because the expectations are accurate rather than because they are self-fulfilling; and powerful self-fulfilling prophecies may selectively occur among students from stigmatized social groups. Research has clearly shown that, along with factors such as student gender and ethnicity, teachers' expectations may be associated with students' perceived social class or socioeconomic background (Boser, Wilhelm & Hanna, 2014; Sorhagen, 2013; Tauber, 1997).

While much of the more recent evidence on teacher expectations does not add significantly to what was known a decade ago, there have been some new developments in the area that are worth mentioning in the context of this review. These relate to the following: the assessment of the impact of teacher expectations over time; individual differences in expectations among

teachers themselves (including 'class level' expectations); the role of parental expectations (and in particular the power of maternal expectations to act as a buffer against low teacher expectations); and the importance of teachers' awareness of the potential impacts of their own prejudices.

Evidence from a recent longitudinal study suggests that teachers' expectations can have a lasting impact on student outcomes. A study by Sorhagen (2013) used data from the National Institute of Child Health and Human Development (NICHD) Study of Early Childcare and Youth Development (SECCYD) to examine the impact of early teacher expectations on later achievement. A sample of almost 1,000 children drawn from 10 sites across the USA and their teachers provided data to examine whether a) teacher expectations in the first year of elementary school continued to influence student achievement up to age 15 and b) the effects were greater among lower income students. Following previous conventions in research in the area, teacher expectations were operationalised by computing a discrepancy score between the teacher's ratings of a student's academic performance and that child's score on a standardised test in first grade. Analyses revealed that when teachers had underestimated first grade students' abilities, these students had significantly lower achievement at age 15 than would have been predicted, even when taking account of prior measures of ability, gender, ethnicity, family income and other factors known to influence achievement. Furthermore, under- and overestimation of early mathematical and language abilities (but not reading abilities) had greater effects on students from lower income families, leading Sorhagen to conclude that, 'The fact that self-fulfilling prophecies in first-grade classrooms exerted an especially lasting impact on the achievement of disadvantaged students raises the possibility that teachers' underestimation of poor children's academic abilities may be one factor that contributes to the persistent and worrisome gap in achievement between children from disadvantaged socioeconomic backgrounds (p. 475).

Some studies in the area have investigated the impact of teacher expectations at the level of the class rather than at individual student level. The maintenance of expectations at class level is related to individual characteristics of teachers, such as the extent to which they discriminate between high and low achievers or use differentiated teaching with particular groups of students. Using teachers' ratings of their students in conjunction with data on the achievement of those students, Rubie (2007) classified teachers into those who had significantly higher or lower expectations for the students in their classes than were merited by students' actual achievement levels. Results of observational work in their classrooms indicated that the instructional and socioemotional environments of the high expectations teachers differed from

those of average and low-expectations teachers in several important ways. These included the extent to which these teachers constructed frameworks for student learning that included sufficient and clear explanations and instructions, carefully oriented students to tasks, linked new concepts to prior learning, and provided higher level feedback and questioning. The authors concluded that teachers' class-level expectations may be more significant for student learning than expectations at the level of the individual, suggesting that both preservice and practising teachers might benefit from feedback based on observation of their own practices, and information on how certain practices might influence student motivation and learning.

In a study of nine- to 16-year-olds from low income families, Benner and Mistry (2007) found that jointly high maternal and teacher expectations had a positive impact on academic competence and outcomes, while, not surprisingly, low expectations had a negative impact on outcomes. However, one of the most interesting findings was that high maternal expectations acted as a buffer against the impact of low teacher expectations. In cases where mothers' expectations were high and teachers' were low, students performed significantly better than their peers whose maternal and teacher expectations were low. The implication of this is that efforts to raise parents, as well as teachers', expectations may prove effective in addressing disadvantage. In Ireland, contextual data provided by parents of students who participated in the national assessments of reading in 2014 revealed that parent expectations were strongly associated with reading achievement. The children of parents who indicated that they expected their child to 'do well in English reading this year' achieved higher reading scores that those with lower expectations even after controlling for all other background and school-level variables in the model (Kavanagh et al., 2015).

Archambault, Janosz, and Chouinard (2012) explored the moderating effect of teachers' expectations and general sense of efficacy on the relationship between students' achievement and those students' cognitive engagement and achievement one year later. Their study used a longitudinal sample of 79 mathematics teachers and their 1,364 secondary school students from 33 schools serving disadvantaged communities in Québec, Canada. Results indicated that teachers' self-reported beliefs directly influenced student academic experience. However, they did not exert a greater influence on low-achieving than on high-achieving students. On the basis of their study, the authors suggested that in schools serving students from poor socioeconomic backgrounds, teachers should be made aware of the role their attitudes can play on students' cognitive engagement and achievement, and teachers should be assisted in developing positive attitudes towards all students.

A climate of high teacher expectations is a commonly cited feature of effective schools (e.g., Sammons, Hillman & Mortimer, 1995). Therefore, it is not surprising that policies aimed at raising expectations tended to feature in efforts at comprehensive school reform. Evaluations of Success for All and the School Development Program, both of which were aimed at addressing the needs of disadvantaged students, and both of which included a strong drive towards high expectations, revealed positive effects on student achievement (Borman, Hughes, Overman & Brown, 2003). However, more recent syntheses of research on the impacts of such costly and complex interventions by Lipsey et al. (2012) revealed only moderate impacts on achievement (*d*=.08 and *d*=.15). Stand-alone programmes aimed at helping teachers to raise their expectations have also been developed. One programme in the United States known as TESA (Teacher Expectations and Student Achievement) has been widely used since the 1970s and aims at helping teachers to change their expectation-related behaviours. TESA involves training teachers to use more efficacious behaviours in the provision of response opportunities and feedback to students, and enhancing their personal regard for students. Although TESA has been perceived by teachers to have had positive effects, there is an absence of published evidence regarding its impact on achievement.

While a large body of research now exists on the issue of teacher expectations, surprisingly little attention has been given to strategies to measure, or raise, expectations. Recommendations arising from some of the studies described here include increasing teachers' awareness of the power of their own expectations, and getting teachers to employ strategies to raise low expectations. However, very often details of how these can be achieved are not provided. A potentially useful method was employed by Van Den Berg, Denessen, Hornstra, Voeten and Holland (2010) in a study which highlighted the importance of developing teachers' awareness of their own prejudices. Van Den Berg et al. constructed a six-item scale to measure teacher expectations that focused on students' performance, ability and level of attainment. For example, one of the items was 'He or she will have a successful school career'. The authors suggested that such a scale provides a quick and easy method for teachers to examine their own prejudices, and the benefits of such awareness and insights may influence their subsequent interactions with members of stigmatized groups. As students from poor socioeconomic backgrounds have been identified in the research of being particularly at risk of having their capabilities underestimated by their teachers, the development of such awareness would seem particularly important in schools serving disadvantaged students. Indeed, addressing low expectations among teachers might help to close rather than maintain or widen the gap between the achievement of those from disadvantaged backgrounds and others.

**Conclusion**

Given the importance attributed to teacher expectations in the literature, and, intuitively, among anyone concerned with educational matters, it is surprising that there have not been more developments in the area since the literature was reviewed previously. This may be related to the fact that teacher expectations are so difficult to measure accurately, and that students' outcomes are subject to so many potential other influences that it is difficult to make attributions regarding the precise effects of teachers' expectations. However, that the finding that expectations tend to be lower than warranted for students from poor backgrounds appears to stand is important in the context of this review. It suggests that raising teachers' awareness of the impact of their own prejudices would be a worthwhile element in a range of strategies aimed at reducing the achievement gap between students from disadvantaged backgrounds and their more advantaged counterparts.

# 8. A Review of Previous and Current Strategy in Ireland

In this section, the implications of what has been presented in this review for assessing previous interventions in Ireland are considered. In this regard, it is worth summarising a) what is known about the effectiveness of national initiatives that preceded the current one (DEIS), and b) describing what could be considered outcomes of DEIS from its ongoing evaluation. In Chapter 9, the extent to which effective strategies identified in the current literature review are features of DEIS will be briefly examined.

**A Summary of what is known about the Effectiveness of Initiatives that Preceded DEIS**

Part of Archer and Weir's (2005) review involved examining the results of programme evaluations in Ireland with a view to establishing the extent to which each of the initiatives had been successful in meeting its original aims and objectives. The following is a summary of their findings.

The ultimate goal of schemes to address the problems experienced by pupils from disadvantaged backgrounds, whether stated explicitly or not, is to bring about improvements in their educational achievements and attainments. Whether these improvements have occurred, and if the gap between disadvantaged students and their more affluent counterparts has been reduced, has included, but not been the sole focus of, many of the evaluations. Test data were gathered as part of the evaluations of the Rutland Street preschool project, Early Start, the Home-School-Community Liaison scheme and Breaking the Cycle at primary level. With the exception of the follow-up study of the Home-School-Community Liaison scheme (Ryan, 1999) and the Rutland Street project (Kellaghan & Greaney, 1993), there is little evidence that programmes had any impact on achievement. In Breaking the Cycle, for example, no improvements in reading or mathematics outcomes were observed over a 6-year period at either Third or Sixth class (Weir, 2003).

However, programme evaluations have revealed positive outcomes in other areas. In general, programmes have been positively evaluated by those directly involved. Junior class teachers in Breaking the Cycle schools considered the reduction in the size of their classes to have benefits for their pupils including increased individual attention, easier identification of individual pupils' needs, and a belief that participating in the scheme had improved their ability to respond effectively to their pupils' learning needs (Weir, Milis, & Ryan, 2002). In the evaluation of the Rutland Street project, changes in parents' behaviour in ways which would be expected to enhance their children's education were found (Kellaghan, 1977), while the evaluation of the HCSL scheme found increases in parents' involvement in their children's education (Ryan, 1994). At the level of resourcing schools, studies have shown that schools participating in programmes aimed at addressing disadvantage had

experienced positive discrimination in comparison with non-participating schools and were better served in terms of funding and staffing than non-participants (Kellaghan et al. 1995; Weir, 2004; Kelleher & Weir, 2017).

**Some Lessons from Giving Children an Even Break**

Giving Children an Even Break (GCEB) was the immediate predecessor to the DEIS programme and was in operation from 2001 to 2005 when it was subsumed into DEIS. It was not subject to a formal evaluation, but aspects of its implementation were the subject of two reports to the DES (Weir, 2004; Weir, Archer, Pembroke & McAvinue, 2007). GCEB differed from previous schemes in two important ways. First, it set out to provide additional resources to schools serving pupils from disadvantaged backgrounds, regardless of whether they contained large or small numbers of target pupils. Second, it had a significant rural component, serving 416 rural schools modelled on Breaking the Cycle (rural), which involved the allocation of a shared co-ordinator post to clusters of proximal schools to work with pupils and their families. As well as extra funding, urban schools with the highest levels of disadvantage were eligible to be considered for additional staff. About one-quarter of the schools in urban areas were considered for additional posts to permit the operation of maximum junior and senior class sizes of 20 and 27, respectively. Data provided by the DES to the ERC showed that just over half of these schools (*N*=224) received additional posts based on their existing pupil and teacher numbers[6]. In a summary of findings relating to the implementation of Giving Children an Even Break, Weir (2004) concluded that many of the practical aspects of GCEB were successfully implemented. However, some difficulties with staffing arrangements were noted. The appointment of staff to schools in rural areas was not unproblematic, with some clusters experiencing difficulty attracting staff. In the 2003/2004 school year, a significant minority (30%) of cluster co-ordinator posts remained unfilled. It is also very likely that the implementation of the scheme suffered as a result of a failure to provide in-service training, in the form of separate advisory committees, for participating urban and rural schools. As is clear from the current review, the literature on class size reduction initiatives and professional development indicates that teachers require ongoing support and training in order to derive maximum benefit from initiatives such as GCEB. Also, the absence of a formal evaluation of the scheme (which probably would have included the collection of test and other data from pupils) makes it difficult to assess its effectiveness in a range of areas, including its impact on pupil achievement and attitudes.

[6] The schools that did not receive additional posts were already operating classes within these limits, mainly because they were already in schemes aimed at addressing disadvantage such as the DAS or BTC.

A subsequent study conducted by the ERC for the DES (and published after the Archer and Weir review in 2005) used data collected from principals and cluster co-ordinators in GCEB schools to examine the implementation and efficacy of the programme (Weir et al., 2007). The results of a questionnaire survey of principals in 2005 indicated that the programme was highly regarded by principals, that most GCEB resources appear to have been used in appropriate ways, and that the majority of schools targeted programme resources at pupils from disadvantaged backgrounds (or their parents). Some negativity was noted, however, most of which concerned administrative issues relating to a perceived inadequacy of guidance and support for participating schools. Many principals and co-ordinators indicated that the absence of adequate guidelines in written form (e.g., on how to spend grants under the scheme) hindered the success of the scheme, and felt that this compounded the difficulties arising from the failure to appoint, as planned, a team of people who could provide advice and support to participating schools. On the basis of their own reports, it seems that some rural cluster co-ordinators were spending less time working with parents and more time working with pupils than had been intended by the designers of the programme. A number of co-ordinators reported that there was resistance on the part of principals of some schools to homes being visited by co-ordinators. This was seen as particularly problematic because such visits were seen as a key component of the programme. Notwithstanding these findings, the vast majority of co-ordinators reported that they found their work enjoyable, that it gave them a sense of accomplishment, and that it was worthwhile.

A key feature of GCEB was provision for the reduction of the size of junior classes to a maximum of 20 pupils in schools in urban areas with the highest concentrations of disadvantage. This was achieved in about three quarters of eligible classes and, in four fifths of the remaining classes, the number of pupils exceeded 20 by a small margin (between one and four). Opposition to the idea of placing pupils from different grade levels in a single class appears to have been an important factor in what might have been regarded as more serious implementation failures.

It is important to acknowledge some of the limitations of the GCEB evaluation described here. First, the only 'outcomes' consisted of the perceptions and reported experiences of the principals of participating schools and, in the case of the rural dimension of GCEB, of cluster co-ordinators. For the most part, the evaluation was concerned with implementation (e.g., the deployment of human and financial resources made available to schools and the extent to which the planned positive discrimination in terms of class size was achieved). A major drawback was the absence of test data from pupils in programme schools and on data from their parents. The existence of such data would have allowed the impact of the programme on student achievement to be examined, as well

as the relationship between achievement and home background to be explored. Furthermore, the evaluation did not start until GCEB had been in place for several years and all of the data collected referred to a single point in time (i.e., there was no longitudinal dimension). Finally, it is worth noting that all of the data used in the evaluation — apart from the class size data supplied by the DES — were in the form of self-report questionnaires. Ideally, field visits involving observation and interviews would have enabled a clearer picture of the operation of the scheme to emerge.

**Recommendations Arising from the Reviews of GCEB for the DEIS programme**

In terms of implementation, perhaps the most obvious implication of the GCEB experience for any successor programme was the importance of providing advisory and other support services to participating schools. From the beginning of DEIS, provision for such services was made in participating schools (e.g., schools in the SSP were prioritized in the Primary Curriculum Support Programme – which later became the Professional Support Service for Teachers or PDST – for access to professional development support). Findings from the reviews of GCEB (Weir, 2004; Weir et al. 2007) indicated that, for maximum benefit, supports needed to be put in place early in the life of a programme and schools made aware of the existence of these supports as soon as possible.

Some elements of the evaluation of DEIS arose, at least partly, from the evaluation of GCEB. First, support systems that had been put in place for the SSP under DEIS were monitored from the start of the programme. Second, because positive discrimination in terms of class size can be eroded by changes in, for example, the appointment and retention schedules that apply to all schools, it was considered important to repeat the exercise that was done for GCEB schools in SSP schools at regular intervals (see Weir & McAvinue, 2012; Kelleher & Weir, 2017). Third, addressing the acknowledged limitations in the reviews of GCEB (e.g., the absence of longitudinal data, and of test and other data from students and their parents, as well as a range of qualitative data from school visits and interviews with key personnel) were prioritised in the evaluation of DEIS.

**The DEIS Programme**

In 2005, primary schools with the highest levels of disadvantage nationwide were identified via a survey of principals by the ERC on behalf of the DES for inclusion in DEIS. As there were no centrally available data on the home background characteristics of students at primary level in Ireland, all 3,200 principal teachers nationwide were asked to provide details of their students' background characteristics. These included factors such as residence in local authority housing, lone-parent family

status, and family unemployment[7]. All schools were rank-ordered on an index based on these combined variables (separate rank orders were compiled for urban and rural schools) and the DES used these lists to identify the schools with the greatest concentrations of disadvantaged students for inclusion in DEIS. DEIS was introduced in 2007 and aimed at addressing the educational needs of children and young people from disadvantaged communities, from pre-school through second-level education (3 to 18 years). Strictly speaking, almost all primary schools in the state are in the DEIS programme, because most schools receive a financial allocation to acknowledge the presence even of very small numbers in the school of students from disadvantaged backgrounds. However, it also comprises an integrated School Support Programme (SSP) which is intended to bring together, and build upon, existing interventions for schools with a concentrated level of educational disadvantage (i.e., it is aimed at those schools at the top of the rank order based on the survey described above) (DES, 2005). The SSP under DEIS differs from its predecessors in that it has a greater focus on school planning and on activities designed to boost literacy and numeracy. Originally, there were about 340 rural and 340 urban primary schools receiving supports[8]. Participating urban SSP schools are divided into two 'bands', depending on their assessed level of disadvantage, with Band 1 schools having more concentrated levels of assessed disadvantage than Band 2 schools. In 2017, the DES admitted additional schools and promoted some others from Band 2 to Band 1. This brought the total number of participating rural schools to 363, the total number of Band 1 urban schools to 233, and the total number of Band 2 urban schools to 107.

Participating urban schools are entitled to a range of resources, with more intensive resource allocation in Band 1. Briefly, schools in Band 1 are entitled to: operate junior classes (the first four years of primary school) with maximum class sizes of 20; the allocation of administrative (non-teaching) principals on lower enrolment and staffing figures than apply in primary schools generally; additional non-pay/capitation allocation based on assessed level of disadvantage; financial allocation under a school books grant scheme based on level of disadvantage; access to the School Meals Programme; access to a literacy/numeracy support service and to literacy/numeracy programmes (Reading Recovery; First Steps; Maths Recovery; Ready, Set, Go Maths); access to homework clubs/summer camps assisting literacy and numeracy development; access to Home-School-

[7] For more detailed information on how programme schools were identified, see Archer and Sofroniou (2008).
[8] There are differences between rural and urban DEIS schools apart from their location. Most rural schools in DEIS are small schools, and the supports they receive under DEIS differ from schools in urban areas (e.g., class size is not reduced). The evaluation of DEIS has also revealed differences in nature of disadvantage in rural and urban areas. For example, the relationship between poverty and educational outcomes is not as strong in rural as in urban areas and pupils in rural DEIS schools have better achievement levels than their urban counterparts (see Weir, Archer & Millar, 2009).

Community Liaison services (including literacy and numeracy initiatives involving parents and family members, such as paired reading, paired mathematics, Reading for Fun and Maths for Fun); access to transfer programmes supporting progression from primary to second-level; access to planning and other professional development supports from the Professional Development Service for Teachers (PDST). Schools in Band 2 receive all of the above except reduced class sizes at junior level.

The DEIS programme is currently undergoing a review, and additional supports to schools will be made available in due course. The DEIS Plan 2017 set out the Department's vision for education for those in communities at risk of disadvantage and social exclusion (DES, 2017). The plan is based on the ongoing review of the DEIS Programme and commitments in the Programme for a Partnership Government and the Action Plan for Education.

It presents an ambitious set of objectives and actions to support children who are at greatest risk of educational disadvantage, centred around five key goals:

1. To implement a more robust and responsive Assessment Framework for identification of schools and effective resource allocation
2. To improve the learning experience and outcomes of pupils in DEIS schools
3. To improve the capacity of school leaders and teachers to engage, plan and deploy resources to their best advantage
4. To support and foster best practice in schools through inter-agency collaboration
5. To support the work of schools by providing the research, information, evaluation and feedback needed to achieve the goals of the Plan.

This represents a new phase in the DEIS programme, and changes to the original programme (including the admission of additional schools to the programme) will need to be taken into account in planning future evaluation activities.

**Summary of Findings from the Evaluation of DEIS over the First Decade**

At the request of the DES, the Educational Research Centre (ERC) began work in 2007 on an independent evaluation of the SSP component of DEIS in primary and post-primary schools[9]. Like the programme itself, the evaluation is multifaceted, and is attempting to monitor the implementation of the programme and assess its impact on students, families, schools, and communities at primary and post-primary levels. While questionnaire studies have being used to investigate some issues, school visits, interviews, and focus groups have also been used in the evaluation. The evaluation has also

[9] Although the post-primary element of DEIS is also being evaluated and will be described briefly, the main focus here is on the evaluation conducted in urban primary schools.

exploited data provided by the DES to examine some implementation issues in detail (such as class size in DEIS and non-DEIS schools at primary level). Other data have been supplied by the State Examinations Commission to allow outcome data in post-primary DEIS and non-DEIS schools in the state examinations to be compared over time, while the DES provided data on Junior and Senior Cycle retention rates to permit longitudinal analyses to be conducted to explore differential retention levels in DEIS and non-DEIS schools.

A major evaluation focus from the outset was on gathering data from school staff, students and parents. This was done by various means, including surveys of principals, teachers, students and parents, as well as through interviews and focus groups. For example, in a series of focus groups with principals in nine locations nationwide in 2014, participants were asked to reflect on what they felt were the most valuable aspects of DEIS and to identify the most important determinants of improved student outcomes. The evaluation data generated from this exercise, as well as data on measured student outcomes in the form of reading and mathematics test scores and attitudes towards school, are described in detail in Kavanagh, Weir and Moran (2017) and summarised later here.

All participating urban, rural, and post-primary schools have contributed evaluation data, although more intensive data collection has taken place with a smaller number of schools that have identified themselves as particularly interesting in various ways (for example in urban primary schools that achieved consistent increases in average standardised test scores). Evaluation reports have been published on a range of topics, some of which concern rural primary schools (Weir, Archer & Millar, 2009; Weir, Errity, & McAvinue, 2015), post-primary schools (McAvinue & Weir, 2015; Weir, McAvinue, Moran & O'Flaherty, 2014), and of most relevance in the current context, urban primary schools (Kavanagh, Weir & Moran, 2017; Kelleher & Weir, 2017; Weir & Archer, 2011; Weir & Denner, 2013; Weir & McAvinue, 2012; Weir & Moran, 2014). The findings relating to urban primary schools are summarised below.

***Implementation levels***

A range of positive outcomes have been noted by the evaluators. With two exceptions, all of the main elements of the DEIS Action Plan (DES, 2005) were put in place at national level, and there is no evidence of any serious implementation failures at school level. Two system-level implementation failures were noted at the outset. The first was the absence of the early childhood aspect of DEIS – the plan had been to establish a dedicated pre-school attached to primary schools with concentrations of children from disadvantaged backgrounds. The second was the failure to establish a sabbatical leave system for DEIS principals. All other aspects of the programme were provided to schools as envisaged.

Indeed, the response of schools to the initiative was found to be overwhelmingly positive, both in the sense that what happened at school level was in line with what was envisaged in the Action Plan, and in the sense that participants valued highly what was put in place. Data collected indicated that various aspects of the programme have been successfully implemented. For example, junior class sizes were reduced in line with programme guidelines (Weir & McAvinue, 2012; Kelleher & Weir, 2017), literacy and numeracy programmes were implemented as intended in all schools, and surveys of all participating schools and follow-up interviews with principals regarding planning for DEIS revealed that virtually all had embraced the planning process (Weir & Archer, 2011). Planning and target setting in the areas of literacy, numeracy, attendance, and parent and community involvement were elements of the programme that were stressed from the outset and, in fact, were conditions of schools' participation in the programme. Schools were guided in setting and monitoring progress towards targets, revising them as necessary, and were supported in doing so by members of the PDST. It should be noted also that the uptake of professional development opportunities in programme schools was very high. At individual level, many schools demonstrated innovative use of resources allocated under DEIS by, for example, establishing transition programmes with local post-primary schools serving the same families.

Feedback from focus groups with principals indicated that small classes were highly valued by all. Principals of some Band 1 schools explained how their school had benefited from lower teacher-pupil ratios since before the SSP began (as a result of their participation in previous programmes for disadvantage), but that the progress made in recent years would not have been possible without the long-term exposure to small classes. All agreed that small class sizes were essential to facilitate the successful implementation of literacy and numeracy initiatives, and, in this sense, could be regarded as a critical determinant of progress. The interdependence of various factors was frequently stressed by participants. Many felt that the elements of the SSP were interconnected and that it was unrealistic to isolate just one or two. The success of specialised literacy and numeracy programmes, for example, was described as being "inextricably linked", both to CPD for classroom teachers, and to adequate learning support and resource provision. It was suggested that this may be one of the reasons that DEIS appears to have been more successful than many previous programmes addressing educational disadvantage.

***Student outcomes***

The monitoring of change in achievement (by comparing test scores in reading and mathematics) over the period 2006/07 to 2015/16 is a major feature of the evaluation. It should be noted that the preselection of participating schools made it impossible to subsequently identify a matched control group of schools with similar levels of disadvantage (i.e., all schools identified as having concentrations of target families were in the programme). However, a control group would not have been a viable option in this case because withholding treatment from pupils who had an identified need would be unethical, not to mention the fact that the programme is funded by the exchequer. It was possible, however, to use comparisons with national norms in the case of reading and mathematics outcomes at primary level. Similarly, at post-primary level, comparisons of outcomes over time in DEIS and non-DEIS schools were facilitated by the availability of data from the state examinations[10].

At primary level, the evaluation involves cross-sectional comparisons of achievement between different student cohorts as well as longitudinal studies of achievement. Pupils in Second, Third, and Sixth class (typically eight, nine and twelve-year olds) in a sample of 120 schools in the urban dimension of the SSP participated in testing of reading and mathematics achievement in 2007[11]. Pupils in the same schools and class levels were retested on three further occasions (2010, 2013 & 2016). Some of these students were tested on more than one occasion (e.g., those in Third class in 2010 were tested again in Sixth class in 2013). In 2016, 17,072 pupils across the four grade levels were involved in the testing exercise.

The evaluation of the programme revealed that the measured achievements (English reading and mathematics) of pupils attending schools participating in DEIS were well below those of pupils on whom the tests were standardised (Kavanagh, Weir & Moran, 2017). Furthermore, the average achievements of pupils in schools in Band 1 were consistently below those of pupils in schools in Band 2. However, the data showed an upward change in reading and mathematics achievement of pupils in all grade levels between 2007 and 2010, between 2010 and 2013, and between 2013 and 2016 (although the increases in 2016 were more modest than those found in 2010 and 2013).

---

[10] Although beyond the scope of the current paper, the evaluation at post-primary level also revealed greater improvements in outcomes in DEIS schools than in non-DEIS schools in both attainment (retention in school until the end of the Junior Cycle) and in student achievement in the Junior Certificate Examination (McAvinue & Weir, 2015).

[11] Data were not collected from 5th class pupils in 2007, but were included in 2010, 2013 and 2016 to create a second longitudinal cohort (2nd class in 2010 to 5th class in 2013).

As already noted, schools such as those participating in DEIS tend to have greater concentrations of low achievers than non-participating schools, and test data collected for the evaluation bears this out. The percentage of pupils with scores below the 10th percentile decreased at all grade levels over the nine-year period, although the decrease was greatest at Second class level, bringing Second class pupils in DEIS schools close to the national average. The discrepancy between pupils in DEIS schools and those in the norm group was greatest at Sixth class level, with almost twice the percentage of low-scoring pupils in DEIS schools than in the norm group in 2016. The percentage of high-achieving students – those scoring at or above the 90th percentile - was lower than the national average of 10% (being less than 5% at all grade levels) in 2016. There has been a slight increase in the percentage of very highly scoring pupils over the four cycles of testing (particularly in mathematics). This suggests that the decrease in low scorers was not achieved at the expense of a reduction in high scorers (a possibility if an exclusive focus was placed on raising the achievement of lower-achieving pupils).

The observed gains need to be considered in light of a number of factors that might have been expected to lead to a *decline* in achievement over the period. First, attendance rates on the days of testing were higher in 2010 than in 2007 and increased again in 2013 and 2016. This means that potentially more poorly performing children were present for the tests in 2013 and 2016 than in 2007 or 2010 (as poor achievers are more likely to be absent). Attendance levels have improved greatly in DEIS schools since the programme was introduced (this may of course be a consequence of measures introduced by schools as part of DEIS as schools were required to develop attendance targets and improvement strategies as part of their school plan). Second, fewer pupils were exempted by teachers in 2016 or 2013 than was the case in 2007 or 2010 (exemptions were based on pupils' inability to attempt the test due to a range of factors including learning disabilities and poor ability in English). Therefore, improvement in test scores cannot be attributed to greater numbers of exclusions from testing). Third, it is likely that since the programme began, families served by the schools have been experiencing the effects of the serious economic recession that took place in Ireland since about 2008. In other words, levels of disadvantage are likely to have increased in schools nationwide and possibly in schools in our sample.

It is important to note that not all schools improved their outcomes to the same extent (and indeed a very small number of schools did not improve at all) despite the fact that they were allocated the same resources. For this reason, work is ongoing in an effort identify the factors that contributed to improvements. This work, which has involved a number of approaches including the production of complex statistical models of achievement, focus groups with principals, and visits to schools involving interviews with various key staff, has proved to be challenging. As yet, clear-cut factors that distinguish successful schools from others have not emerged, although a context report is in

preparation which will examine a range of potential factors in more detail (Kavanagh & Weir, in preparation).

As already noted, interpreting the outcome data is complicated by the absence of a control group. Also, the results of the 2014 National Assessments of English Reading and Mathematics showed an overall national improvement between 2009 and 2014 in both reading and mathematics (Shiel et al., 2015). It is possible that the improved outcomes in DEIS schools merely reflect improved outcomes at system level, or, alternatively, that overall national improvement may be in fact be partly attributable to the contribution of the subgroup of students in DEIS schools. Because there is no overlap between the tests used in the national assessments and in the DEIS evaluation, a test equating exercise in a sample of schools in which the two tests can be benchmarked against each other is being considered, allowing the contribution of DEIS and non-DEIS students to the improvements to be assessed.

Some light may be shed on the factors contributing to improved outcomes by considering what principals in particularly effective schools considered important. In visits to schools in which consistent increases in reading and mathematics were noted, principals attributed the improved outcomes to positive attitudes school among students; the setting of literacy and numeracy targets; the use of specialised literacy and numeracy programmes; and small class size. Other contributory factors included increased levels of home support and parental involvement; engaging parents in students' learning; improvement in learning support services for low-achieving children; improved attendance; and increased professional support for teachers. In the larger focus groups, almost all principals confirmed that key determinants of achievement gains had been the introduction of literacy and numeracy programmes and an increased focus on planning and target setting in these areas. Many also described how there had been an increased emphasis on literacy and numeracy in a broad sense, and that the use of specialized initiatives and clear target-setting were just two of several factors implicated in gains. Principals were least likely to attribute gains to a general improvement in standards nationwide, increased exposure to the kinds of standardized tests used in the evaluation, or increased numbers of newcomer pupils attending DEIS schools.

As well as achievement outcomes, the evaluation assessed students' experiences of, and attitudes towards, school and learning via a questionnaire completed by all students in conjunction with the administration of the achievement tests. In 2016, pupils reported more favourable attitudes to school, reading, and mathematics than in any other year of testing and this increased positivity was found at all grade levels. Students with more positive attitudes tended to have higher average achievement in both reading and mathematics. Students' educational aspirations and expectations also increased substantially from 2007 to 2016, with more pupils aspiring and expecting to attend

college or university than on any previous occasion. Those with higher aspirations and expectations tended to have higher achievement. However, there remains a gap between pupils' educational aspirations and expectations, with substantially greater proportions of pupils aspiring to attend college or university than actually expecting to do so. Comparative data from Second class pupils were available from the national assessments in 2014 and revealed that similar proportions of pupils in both studies reported liking school (58% in each). Educational aspirations in the DEIS evaluation were broadly in line with those of Sixth class pupils nationally, with 76% of pupils in the evaluation aspiring to attend college or university, compared to 83% in the 2014 National Assessments. There was greater disparity in educational expectations, however, with 58% of Sixth class pupils in the DEIS evaluation expecting that they would actually attend college or university, compared with 70% nationally.

# 9. Summary and Overall Conclusions

There have been no major developments since the previous review of the literature in 2005, although in the case of most of the strategies described, more is known now about the conditions of their effectiveness. A search of the literature failed to identify any important emergent strategies with the exception of summer programmes which has been added to the current list of areas. Some other strategies that may ultimately prove useful (those relating to student wellbeing which is addressed briefly later) are as yet unsupported by a large enough research base to merit inclusion in the current review. The following sections summarise the main findings in the areas reviewed.

Addressing disadvantage by reducing **class size** is a very specific kind of intervention, and as such, lends itself to examining quite particular conditions of effectiveness and educational outcomes. The current review of the literature confirmed the findings of the earlier one which suggested that class size reduction can have a definite impact on student outcomes if adequately resourced and appropriately planned. Moreover, the recent literature is largely in agreement with the earlier literature in terms of specific conditions of effectiveness: those most likely to benefit are children in the early grades and those from disadvantaged backgrounds; and that the number in students in classes should be below 20; and that the longer students are in small classes, the greater and more long-lasting the benefits. Recent research suggests that the effects of being in small classes in the early grades persist in later primary school, and are associated with higher levels of achievement, completion rates in post-primary school, and third level enrolment. However, to be maximally beneficial within the wider educational policy context, reductions in class size should be aimed at students from disadvantaged backgrounds, and accompanied by professional development opportunities for teachers so they can best exploit the teaching opportunities they provide.

Emerging research continues to indicate that educational inequality resulting from socioeconomic disparities starts long before children start school, and emphasises the importance of early intervention in tackling educational disadvantage. **Preschool education** has been shown to have a range of short- medium- and long-term benefits for disadvantaged children who receive it, but only if the preschool experiences are of a high quality. Factors associated with preschool effectiveness identified from the reviewed literature include: adequate funding and state expenditure, low adult-child ratios, highly qualified staff, adequate daily and total duration, quality continuing professional development, positive adult-child interactions, effective collaboration with parents, appropriate

curricula, adequate oversight, monitoring and evaluation, and inclusivity and catering for diverse learning needs.

A large body of research, much of which was conducted since the previous review, now exists in the area of teacher **professional development**. This work has served to increase our understanding of what characteristics lead to effective professional development while also pointing to the complexity of the issue. Unlike the previous two areas, the link between providing professional development to teachers and improved student outcomes is less direct. Indeed, many studies have focused exclusively on the impact of such activities on teachers' cognitions and practices rather than on student outcomes. There is, however, some evidence linking teachers' engagement in professional development and outcomes for students from disadvantaged backgrounds. This research suggests that professional development can be effective when it is characterised by active learning, content focus, coherence, collective participation, and is of optimal duration. Thus, the provision of high-quality professional development opportunities with some or all of these characteristics may contribute to an overall strategy aimed at addressing the educational needs of students from disadvantaged backgrounds.

The recent literature on **parental involvement** supports the findings of earlier research in highlighting the importance of parents' participation and engagement for the educational outcomes of their children. Findings from recent meta-analytic studies indicate that more overt parental involvement practices like attendance at school functions, membership of school committees, and fundraising activities are less strongly associated with student achievement than more subtle aspects such as expectations and academic socialisation. An exception to this is the frequency with which parents read to children at home, which has repeatedly been shown to have strong effects on student achievement. Reviews of interventions aimed specifically at parents of disadvantaged children indicate that the programmes most likely to succeed are those aimed at younger children, that involve parent training and continuing support to parents, and that involve strong collaboration and communication between parents and teachers. Programmes involving shared reading and those promoting parental checking of homework have also been shown to be effective. Finally, the literature emphasises the importance of a school climate that is open and welcoming of parental involvement; the degree to which school staff are encouraging and supportive of parents may be more important than specific guidelines and instruction offered by schools.

The reviewed literature indicates that **summer learning programmes** serve to promote learning and increase achievement, and, while earlier research indicated otherwise, disadvantaged children

appear to benefit most from such intervention. Research findings support the effectiveness of both voluntary and mandatory summer programmes, but in either context, programme quality is the crucial determinant of success. Characteristics of effective summer learning programmes include individualised instruction, small classes, parental participation, and the alignment of content covered in the summer programme with that of the regular school year curriculum. Given limitations identified in the evidence base for summer learning programmes, they are perhaps best characterised as a promising avenue through which to address the achievement gap. While high-quality classroom-based programmes seem to offer the most promise, they are acknowledged to be resource intensive. Evidence also exists that home-based summer programmes can have benefits, however, and such an approach is likely to be more cost-effective and to present fewer practical challenges than school-based or classroom-based summer programmes.

The finding of the earlier review that **teacher expectations** tend to be lower than warranted by independent outcome data for students from poor backgrounds was confirmed by the current review. These effects have been found at class as well as at individual level, although the detail of the mechanisms by which students are impacted by the expectations of their teachers, and the precise effects of such expectations, are still not well understood. One difficulty that still exists is the absence of reliable and valid methods of measuring expectations, and of effective strategies to raise teachers' expectations. Assisting teachers to become aware of their own prejudices, and educating them about the power of their expectations for their students, might well serve to reduce the achievement gap between students from disadvantaged backgrounds and their better-off counterparts.

**To what Extent does DEIS Reflect what the International Literature Indicates are Effective Strategies in Addressing Disadvantage?**

As has already been described, previous initiatives showed little impact on student outcomes, making the improvements that were observed in DEIS at all grade levels more noteworthy. While it must be acknowledged that factors other than those associated with the programme may be responsible for the improved outcomes, it is worth reflecting on why DEIS appears to have been more successful than programmes that preceded it.

In designing the DEIS initiative, there was an attempt to remedy what had been identified as gaps in previous provision. In particular, the provision of relevant and good quality professional development opportunities for teachers and an increased emphasis on literacy and numeracy, were to feature prominently. Another element which had been identified as important – the establishment of preschool education for participating schools serving concentrations of families from disadvantaged backgrounds – was also part of the DEIS Action Plan (DES, 2005). Figure 1 shows a range of elements identified from the literature as important in addressing disadvantage. These are comprised of those identified by Archer and Weir (2005) with summer programmes added. It must be remembered that these represent a 'best guess' as to what a successful programme would contain, and the earlier caveat that research findings in many areas are not conclusive, continues to apply.

Where a strategy is considered to be part of a programme, a solid line has been drawn from the left to each individual element on the right. Where a strategy is not an explicit part of a programme, but is likely to be present in some form, a broken line has been used instead (e.g., raised expectations are implicit in setting targets as part of school planning in DEIS).

While not all effective strategies are a feature of DEIS (the most obvious omission is the preschool element), the programme does contain all of the other elements in some form. This compares very favourably with the oldest scheme, the DAS, which contains only a few elements. In general terms, it is possible to identify three main areas in which DEIS differs from, or goes beyond, programmes that predated it. First, the focus on schools' engagement in school planning and target setting has been more intensive than in previous programmes. Planning for DEIS was supported by input from the professional support service for teachers (PDST), and schools were encouraged to set targets in a range of areas, particularly in the areas of literacy and numeracy. We know from data collected as part of the evaluation that most schools were enthusiastic participants in the school planning element of the programme, and actively engaged in the setting of, and monitoring of progress towards, targets. Second, DEIS is the first programme of its kind to provide literacy and numeracy

programmes to participants, and data collected suggest that the uptake of literacy and numeracy programmes has been universal and successful. Third, a system of supports was put in place to assist schools with planning and the implementation of the literacy and numeracy programmes. The support service operated in classrooms to train teachers, via mentoring, modelling, and other methods, in how to implement the programmes with their students. This element was absent from previous interventions, although it had been intended to provide something similar in Giving Children an Even Break.

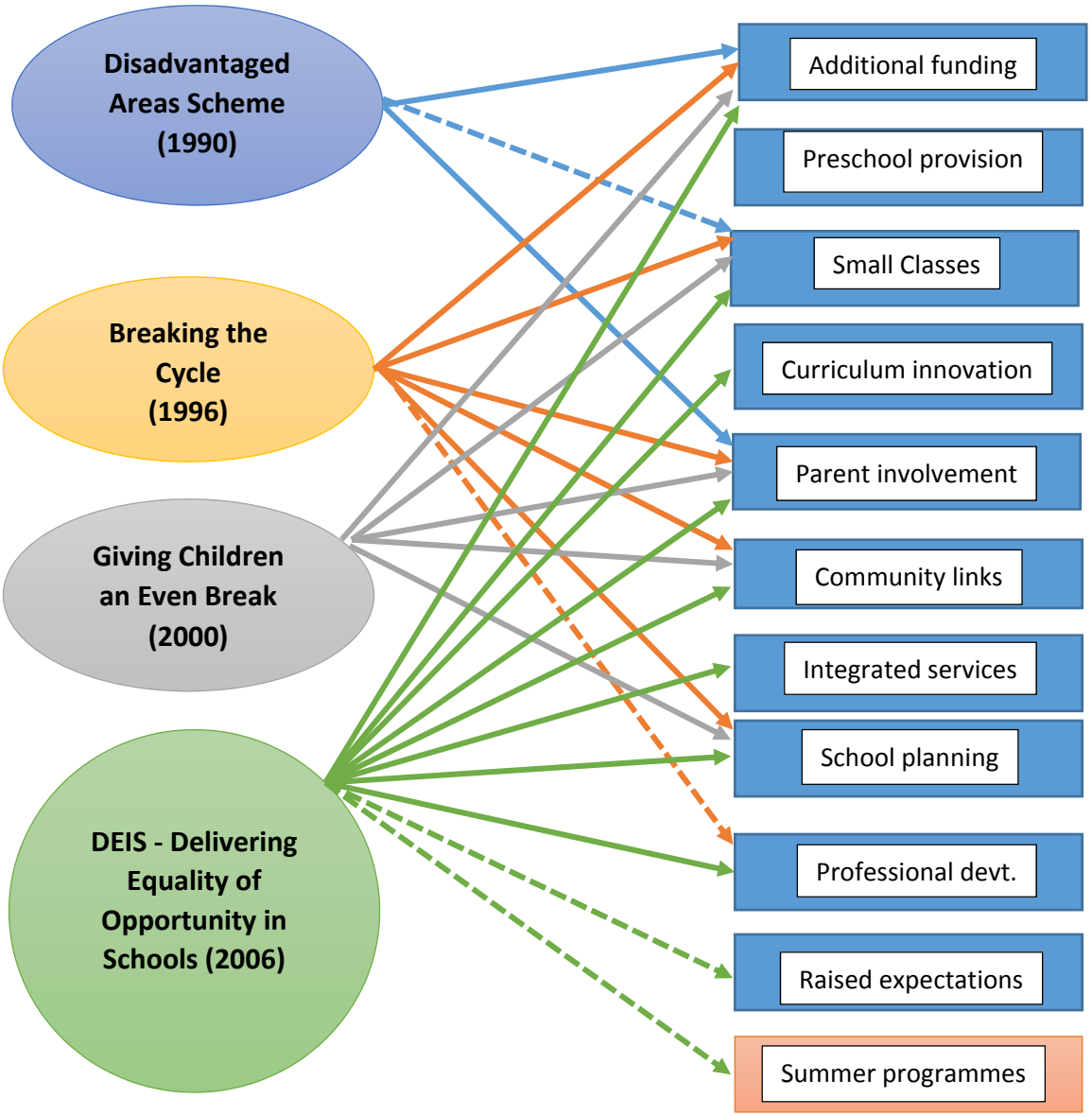


Figure 1. Elements of effective strategy identified from the literature at primary level (right), and the presence of each element in four programmes aimed at addressing problems associated with disadvantage in Ireland.

Clearly, further monitoring and evaluation in DEIS schools is necessary, particularly as the impact of the programme on participants is likely to be more evident in the long-term than the short-term. It is envisaged that the ongoing evaluation of DEIS will form part of a wider programme of research and evaluation designed to better understand the nature of disadvantage.

If implemented, the DEIS Plan 2017 (DEIS, 2017) will bring changes to the existing programme which would be expected to strengthen the programme in areas listed in Figure 1 (such as Integrated Services and Curriculum Innovation). For example, the plan provides for the introduction in all participating schools of initiatives designed to enhance students' socio-emotional wellbeing in the form of the Incredible Years and Friends programmes, both of which will be introduced in DEIS primary schools, and the latter which will be introduced in DEIS post-primary schools. This, combined with the recently enhanced focus on student wellbeing in the curriculum, should serve to address what has been often highlighted by principals and others as an issue that had not received sufficient attention in DEIS schools (see Weir & Archer, 2011; Kavanagh, Weir & Moran, 2017). Weir and Archer noted that when staff in DEIS schools were asked how provision for disadvantage could be improved in DEIS schools '…the area most often raised has been provision for students with emotional or behavioural difficulties. This issue was frequently raised in focus groups. In the Teacher Questionnaire, 50% of classroom teachers indicated that DEIS did not address the needs of pupils with emotional and behavioural difficulties.' (Weir & Archer, 2011, p.89). As an emergent area, there is currently a small but growing body of empirical research on the effectiveness of such strategies. However, some have pointed to the potential usefulness of such interventions in the reduction of educational disparities (e.g., Spizer & Aronson, 2015). It would seem particularly important that the evaluation of DEIS monitors the impact of these interventions because a) evidence from the existing evaluation suggests that students' socioemotional wellbeing was not adequately addressed in the programme heretofore and b) there is independent evidence that emotional behavioural difficulties among students are more prevalent in DEIS primary and post-primary schools than in non-DEIS schools (Cosgrove et al., 2014; Cosgrove et al., 2014). This finding has recently been confirmed by analyses of data by the ERC on the prevalence of various types of complex needs according to school type on behalf of the NCSE.

In the longer term, while it is probable that resources will continue to be targeted at schools serving disadvantaged students, a move to a more sophisticated approach to identification than the existing one has long been recommended (Weir & Archer, 2005). Rather than the current dichotomy in which schools are either included in the SSP under DEIS or are not, a sliding scale in which resources are allocated based on levels of disadvantage would seem preferable. However, regardless of how schools are selected for programmes, standards in schools catering for

concentrations of disadvantaged students require ongoing monitoring, and interventions intended to address the problems associated with disadvantage require ongoing evaluation.

## References


Alexander, K.L., Entwisle, D.R. & Olson, L.S. (2007). Lasting consequences of the summer learning gap. *American Sociological Review, 72(2)*, 167-180.

Allington, R.L., McGill-Franzen, A., Camilli, G., Williams, L., Graff, J., Zeig, J., … Nowak, R. (2010). Addressing summer reading setback among economically disadvantaged elementary students. *Reading Psychology, 31*, 411-427.

Angelucci, M. & Di Maro, V. (2010). *Program evaluation and spill over effects: Impact-evaluation guidelines*. Washington, DC: Inter-American Development Bank.

Angrist, J.D. & Lavy, V. (1999). Using Maimonides' rule to estimate the effect of class size on scholastic achievement. *Quarterly Journal of Economics, 114*(2), 533-575.

Archambault, I., Janosz, M., & Chouinard, R. (2012). Teacher beliefs as predictors of adolescents' cognitive engagement and achievement in mathematics. *Journal of Educational Research, 105*, 319-328.

Archer, P., & Sofroniou, N. (2008). *The assessment of levels of disadvantage in Primary Schools for DEIS*. Dublin: Educational Research Centre.

Archer, P., & Weir, S. (2005). *Addressing disadvantage: A review of the international literature and of strategy in Ireland.* Report to the Educational Disadvantage Committee. Dublin: Department of Education and Science / Educational Disadvantage Committee.

Arteaga, I.A., Humpage, S., Reynolds, A.J. & Temple, J.A. (2014). One year of preschool or two: Is it important for adult outcomes? *Economics of Education Review, 40*, 221-237.

Banilower, E.R., Heck, D.J., & Weiss, I.R. (2007). Can professional development make the vision of the standards a reality? The impact of the national science foundation's local systemic change through teacher enhancement initiative. *Journal of Research in Science Teaching, 44*, 375-395.

Barnett, W.S., Brown, K., & Shore. R. (2004). *The universal vs. targeted debate: Should the United States have preschool for all?* National Institute for Early Education Research Policy Brief, 6. Retrieved from http://nieer.org/resources/policybriefs/6.pdf

Bascia, N. & Faubert, B. (2012). Primary class size reduction: How policy space, physical space, and spatiality shape what happens in real schools. *Leadership and Policy in Schools, 11*, 344-364.

Becker, G.S. (1981). *A treatise on the family*. Cambridge, MA: Harvard University Press.

Benner, A.D., & Mistry, R.S. (2007). Congruence of mother and teacher educational expectations and low-income youth's academic competence. *Journal of Educational Psychology, 99*, 140-153.

Bianchi, S.M. & Robinson, J. (1997). What did you do today? Children's use of time, family composition and the acquisition of social capital. *Journal of Marriage and the Family*, *59*(2), 332-344.

Blank, R.K., de las Alas, N., & Smith, C. (2008). *Does teacher professional development have effects on teaching and learning? Analysis of evaluation findings from programs for mathematics and science teachers in 14 states.* Washington DC: Council of Chief State School Officers.

Blatchford, P., Bassett, P., & Brown, P. (2011). Examining the effect of class size on classroom engagement and teacher-pupil interaction: Differences in relation to pupil prior attainment and primary vs. secondary schools. *Learning and Instruction, 21*, 715-730.

Blatchford, P., Bassett, P., Brown, P., Martin, C., & Russell, A. (2004). *The effects of class size on attainment and classroom processes in English primary schools (years 4-6) 2000-2003.* London: Institute of Education, University of London.

Borman, G.D., Benson, J. & Overman, L.T. (2005). Families, schools, and summer learning. The *Elementary School Journal, 106*(2), 131-150.

Borman, G.D., Hewes, G.M., Overman, L.T., & Brown, S. (2003). Comprehensive school reform and achievement: A meta-analysis. *Review of Educational Research, 73*, 125-230.

Boser, U., Wilhelm, M., & Hanna, R. (2014). *The power of the Pygmalion effect: Teachers' expectations strongly predict college completion.* Washington, DC: Center for American Progress.

Burchinal, M., Howes, C., Pianta, R., Bryant, D., Early, D., Clifford, R. & Barbarin, O. (2008). Predicting child outcomes at the end of kindergarten from the quality of pre-kindergarten teacher-child interactions and instruction. *Applied Developmental Science, 12*(3), 140-153.

Burkam, D.R., Ready, D.D., Lee, V.E. & LeGerfo, L.F. (2004). Social-class differences in summer learning between kindergarten and first grade: Model specification and estimation. *Sociology of Education, 77*(1), 1-31.

Camilli, G., Vargas, S., Ryan, S., & Barnett, W.S. (2010). Meta-analysis of the effects of early education interventions on cognitive and social development. *Teachers College Record*, 112, 579-620.

Chetty, R., Friedman, J. N., Hilger, N., Saez, E., Schanzenbach, D.W., & Yagan, D. (2011). How does your kindergarten classroom effect your earnings? Evidence from Project STAR. *Quarterly Journal of Economics, 126*(4), 1593-1660.

Chingos, M.M. (2013). Class size and student outcomes: Research and policy implications. *Journal of Policy Analysis and Management, 32*(2), 411-438.

Chung-Wei, R., Darling-Hammond, L., Andree, A., Richardson, N., & Orphanos, S. (2009). *Professional learning in the learning profession: A status report on teacher development in the United States and abroad.* Dallas, TX. National Staff Development Council. Retrieved from http://learningforward.org/docs/pdf/nsdcstudytechnicalreport2009.pdf?sfvrsn=0

Cooper, H., Charlton, K., Valentine, J.C., Muhlenbruck, L. & Borman, G.D. (2000). Making the most of summer school: A meta-analytic and narrative review. *Monographs of the Society for Research in Child Development, 65*(1), i-vi + 1-127.

Cooper, H., Nye, B., Charlton, K., Lindsay, J. & Greathouse, S. (1996). The effects of summer vacation on achievement test scores: A narrative and meta-analytic review. Review of Educational Research, 66(3), 227-268.

Cosgrove, J., McKeown, C., Travers, J., Lysaght, Z., Ní Bhroin & Archer (in press). *Educational experiences and outcomes of children with special educational needs: A secondary analysis of data from the Growing Up in Ireland study. Phase 2— from 9 to 13.* Trim, Co Meath: NCSE.

Cosgrove, J., McKeown, C., Travers, J., Lysaght, Z., Ní Bhroin & Archer (2014). *Educational experiences and outcomes of children with special educational needs: A secondary analysis of data from the Growing Up in Ireland study.* Trim, Co Meath: NCSE.

Cotton. K. (1989). Expectations and Student Outcomes. *Northwest Regional Educational Laboratory.* Retrieved August 4th, 2016 from http://educationnorthwest.org/resources/school-improvement-research-series

DEIS (2005). Delivering equality of opportunity in schools: An action plan for educational inclusion. *Department of Education and Skills*. www.education.ie

Desimone, L. (2002). How can comprehensive school reform models be successfully implemented? *Review of Educational Research, 72*(3), 433-479.

Desimone, L. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher, 38(3),* 181-199.

Desimone, L. (2011). Content-focused learning improves teacher practice and student results. *Outcomes, 32*(4), 63-68.

Desimone, L.M., Porter, A., Birman, B., Garet, M., & Yoon, K.S. (2002). How do district management and implementation strategies relate to the quality of the professional development that districts provide to teachers? *Teachers College Record, 104*(7), 1265-1312.

Desimone, L., Smith, T. M., & Phillips, K. J. R. (2013). Linking student achievement growth to professional development participation and changes in instruction: A longitudinal study of elementary students and teachers in Title I schools. *Teachers College Record, 115*(5), 1-46.

Domitrovich, C.E., Morgan, N.R., Moore, J.E., Cooper, B.R., Shah, H.K., Jacobson, L., Greenberg, M.T., (2013). One versus two years: Does length of exposure to an enhanced preschool program impact the academic functioning of disadvantaged children in kindergarten? *Early Childhood Research Quarterly*, 28, 704-713.

Duncan, G.J. & Magnuson, K. (2013). Investing in preschool programs. *Journal of Economic Perspectives, 27*, 109-132.

Dynarski, S., Hyman, J., & Schanzenbach, D.W. (2013). Experimental evidence on the effect of childhood investments on postsecondary attainment and degree completion. *Journal of Policy Analysis and Management*, *32*(4), 692-717.

Education Act (1998). Dublin: Stationery Office.

Ehrenberg, R.G., Brewer, D.J., Gamoran, A., & Willms, J.D. (2001). Does class size matter? *Scientific American*, 68-73.

Englund, M. M., White, B., Reynolds, A. J., Schweinhart, L. J., & Campbell, F. A. (2015). Health outcomes of the Abecedarian, Child-Parent Center, and HighScope Perry Preschool programs. In A.J. Reynolds, A.J. Rolnick & J.A. Temple (Eds.), *Health and education in early childhood,* (pp. 257-285). New York: Cambridge University Press.

Entwisle, D.R., Alexander, K.L & Olson, L.S. (1997). *Children, schools, and inequality*. Boulder, CO: Westview

Entwisle, D.R., Alexander, K.L. & Olson, L.S. (2001). Keep the faucet flowing: Summer learning and home environment. *American Educator, 25*(3), 10-15.

Epstein, J. L., & Sheldon, S.B. (2006). Moving forward: Ideas for research on school, family, and community partnerships. In C.F. Conrad & R.C. Serlin (Eds.*), SAGE handbook for research in education: Engaging ideas and enriching inquiry*. Serlin. Thousand Oaks, CA: Sage Publications.

Fan, X. & Chen, M. (2001). Parental involvement and students' academic achievement: A meta-analysis. *Educational Psychology Review, 13*(1), 1-22.

Finn, J.D. (1997). *Class size: What does research tell us? Spotlight on Student Success.* Philadelphia: Mid-Atlantic Lab. for Student Success, 1997. ERIC Document Reproduction Service No. ED461693. Retrieved from http://files.eric.ed.gov/fulltext/ED461693.pdf

Finn, J.D. & Achilles, C.M. (1999). Tennessee's class size study: Findings, implications, misconceptions. *Educational Evaluation and Policy Analysis, 21*(2): 97–109.

Finn, J.D., Gerber, S.B., Achilles, C.M., & Boyd-Zaharias, J. (2001). The enduring effects of small classes. *Teachers College Record, 103*(2), 145-183.

Finn, J., Gerber, S., & Boyd-Zaharias, J. (2005). Small classes in the early grades, academic achievement, and graduating from high school. *Journal of Educational Psychology, 97*(2), 214-223.

Finn, J.D., Pannozzo, G.M., & Achilles, C.M. (2003). The 'why's' of class size: Student behavior in small classes. *Review of Educational Research, 73*(3): 321–368.

Fredriksson, P., Öckert, B., & Oosterbeek, H. (2013). Long-term effects of class size. *Quarterly Journal of Economics, 128*(1), 249-285.

Garet, M. S., Cronen, S., Eaton, M., Kurki, A., Ludwig, M., Jones, W., … Sztejnberg, L. (2008). *The impact of two professional development interventions on early reading instruction and achievement* U.S. Department of Education: Washington, DC. Retrieved from https://ies.ed.gov/ncee/pdf/20084030.pdf

Garet, M., Porter, A., Desimone, L., Birman, B., & Yoon, K. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal, 38*(3), 915-945.

Gershenson, S. (2013). Do summer time-use gaps vary by socioeconomic status? *American Educational Research Journal, 50*(6), 1219-1248.

Gersten, R., Dimino, J., Jayanthi, M., Kim, J.S., & Santoro, L.E. (2010). Teacher study group: Impact of the professional development model on reading instruction and student outcomes in first grade classrooms. *American Educational Research Journal, 47*(3), 694–739.

Gersten, R., Taylor, M.J., Keys, T.D., Rolfhus, E., & Newman-Gonchar, R. (2014). *Summary of research on the effectiveness of math professional development approaches (REL 2014–010).* Washington, DC: National Center for Education Evaluation and Regional Assistance. Retrieved from http://files.eric.ed.gov/fulltext/ED544681.pdf.

Glass, G, & Smith, M. (1979). Meta-analysis of research on class size and achievement. *Educational Evaluation and Policy Analysis, 1*(1), 2–16.

Gormley, W.T., Jr, Phillips, D. & Gayer, T. (2008). Preschool programs can boost school readiness. *Science*, 320(5884), 1723-1724.

Graue, E., Hatch, K., Rao, K., & Oen, D. (2007). The wisdom of class size reduction. *American Educational Research Journal, 44*(3), 670-700.

Grierson, A.L. & Woloshyn, V.E. (2013). Walking the talk: Supporting teachers' growth with differentiated professional learning. *Professional Development in Education, 39*, 401-419.

Grindal, T., Bowne, J.B., Yoshikawa, H., Schindler, H., Duncan, G.J., Magnuson, K. (2013). *The added impact of parenting education in early childhood education programs: A meta-analysis*. National Forum on Early Childhood Policy and Programs. Retrieved from

http://www.earlysuccess.org/sites/default/files/website_files/files/Engaging%20Families.Abt%20Associates.pdf

Guskey, T.R. (1985). Staff development and the process of teacher change. *Educational Researcher*, *15*(5), 5-12.

Guskey, T.R. (2014). Planning professional learning. Professional Learning: Reimagined. *Educational Leadership, 71*(8), 10-16. Retrieved from www.ascd.org/publications/educational-leadership/may14/vol71/num08/Planning-Professional-Learning.aspx

Guskey, T.R. & Yoon, K.S. (2009). What works in professional development? *Phi Delta Kappan 90*(7): page.

Hattie, J. (2005). The paradox of reducing class size and improving learning outcomes. *International Journal of Educational Research,* 43, 387–425.

Heck, D.J., Banilower, E.R., Weiss, I.R., & Rosenberg, S.L. (2008). Studying the effects of professional development. *Journal for Research in Mathematics Education, 39*, 113-152.

Heckman, J., Grunewald, R., & Reynolds, A. (2006). The dollars and cents of investing early: Cost-benefit analysis in early care and education. *Zero to Three, 26*(6), 10-17.

Heller, J.I., Daehler, K.R., Wong, N., Shinohara, M., & Miratrix, L. W. (2012). Differential effects of three professional development models on teacher knowledge and student achievement in elementary science*. Journal of Research in Science Teaching, 49*(3), p.333-362.

Heyns, B. (1978). *Summer learning and the effects of schooling*. New York: Academic Press.

Hill, H. C., Beisiegel, M., & Jacob, R. (2013). Professional development research: Consensus, crossroads, and challenges. *Educational Researcher*, *42*(9), 476–487.

Hill, N.E. & Taylor, N.E. (2004). Parental school involvement and children's academic achievement. Pragmatics and issues. *Current Directions in Psychological Science, 13*(4), 161-164.

Hoover-Dempsey, K.V. and Sandler, H.M. (1995). Parental involvement in children's education: Why does it make a difference? *Teachers College Record, 97*(2), 310-331.

Ingvarson, L., Meiers, M., & Beavis, A. (2005). Factors affecting the impact of professional development programs on teachers' knowledge, practice, student outcomes and efficacy. *Education Policy Analysis Archives, 13*(10), 1-26. Retrieved from http://files.eric.ed.gov/fulltext/EJ846522.pdf.

Ireland (1996). Parliamentary Debates, Dáil Éireann, *469*, (1).

Jackson, J.K. & Ash, G. (2012). Science achievement for all: Improving science performance and closing achievement gaps. *Journal of Science Teacher Education, 23*, 723-744.

Jepsen, C., & Rivkin, S. (2009). Class size reduction and student achievement: The potential trade-off between teacher quality and class size. *The Journal of Human Resources, 41,* 223-250.

Jeynes, W.H. (2005). A meta-analysis of the relation of parental involvement to urban elementary school student achievement. *Urban Education*, 40 (3), 237-269.

Jeynes, W.H. (2007). The relationship between parental involvement and urban secondary school student academic achievement. *Urban Education*, 42 (1), 82-110.

Jeynes, W.H. (2011). Parental involvement research: Moving to the next level. *The School Community Journal*, Spring/Summer 2011, 21 (1), 9-18.

Jeynes, W.H. (2012). A meta-analysis of the efficacy of different types of parental involvement programs for urban students. *Urban Education*, 47 (4), 706-742.

Johnson, C. C., Kahle, J. B., & Fargo, J. D. (2007). A study of the effect of sustained, whole-school professional development on student achievement in science. *Journal of Research in Science Teaching, 44*, 775–786.

Jussim, L., & Harber, K.D. (2005). Teacher expectations and self-fulfilling prophesies: knowns and unknowns, resolved and unresolved controversies. *Personality and Social Psychology Review, 9*, 131-155.

Kavanagh, L., Shiel, G., & Gilleece, L**.** (with Joanne Kiniry) (2015). *The 2014 National Assessments of English Reading and Mathematics. Volume II: Context report.* Dublin: Educational Research Centre.

Kavanagh, L., Weir, S., & Moran, E. (2017). *The evaluation of DEIS: Monitoring achievement and attitudes among urban primary school pupils from 2007 to 2016.* Report to the Department of Education and Skills. Dublin: Educational Research Centre.

Kellaghan, T. (2001). Towards a definition of educational disadvantage. *Irish Journal of Education, 32,* 3-22.

Kellaghan, T. (1977). *The evaluation of an intervention programme for disadvantaged children*. Windsor, UK: NFER Publishing Company.

Kellaghan, T., & Greaney, B.J. (1993). *The educational development of students following participation in a preschool programme in a disadvantaged area*. Dublin: Educational Research Centre.

Kellaghan, T., Weir, S., Ó hUallacháin, S., & Morgan, M. (1995)**.** *Educational disadvantage in Ireland.* Dublin: Department of Education / Combat Poverty Agency / Educational Research Centre.

Kelleher, C., & Weir, S. (2017). *The impact of DEIS on class size in urban primary schools in 2014/15 with comparative data from 2010.* Report to the Department of Education and Skills. Dublin: Educational Research Centre

Kelly, D., & Kellaghan, T. (1999). *The literacy and numeracy achievement of the first cohort of Early Start children (1994/95) when they were in second class (1998/99)*. Dublin: Educational Research Centre.

Kennedy, E. (2010). Improving literacy achievement in a high-poverty school: empowering classroom teachers through professional development. *Reading Research Quarterly, 45*(4), 384–387.

Kim, J.S. & Quinn, D.M. (2013). The effects of summer learning reading on low-income children's literacy achievement from kindergarten to Grade 8: A meta-analysis of classroom and home interventions. *Review of Educational Research, 83*(3), 386-431.

Kim, J.S. & White, T.G. (2010). Scaffolding voluntary summer reading for children in Grades 3 to 5: An experimental study. *Scientific Studies of Reading, 12*(1), 1-23.

King, F. (2014). Evaluating the impact of teacher professional development: An evidence-based framework. *Professional Development in Education, 40*(1), 89-111.

Krueger, A.B. (1999). Experimental estimates of education production functions. *Quarterly Journal of Economics, 115*(2), 497-532.

Krueger, A.B., & Whitmore, D. (2001). The effect of attending a small class in the early grades on college test taking and middle school test results: Evidence from Project STAR. *Economic Journal, 111*, 1-28.

Krueger, A.B. & Whitmore, D. (2002). Would smaller classes help close the black-white achievement gap? In J. Chubb & T. Loveless (Eds.), *Bridging the Achievement Gap* (11-46). Washington, DC: Brookings Institution Press.

Lee, O., Deaktor, R., Enders, C., & Lambert, J. (2008). Impact of a multiyear professional development intervention on science achievement of culturally and linguistically diverse elementary students. *Journal of Research in Science Teaching, 45*, 726–747.

Leithwood, K., Seashore-Louis, K., Anderson, S., & Wahlstrom, K. (2004). *How leadership influences student learning.* Minneapolis, MN: Center for Applied Research and Educational Improvement, University of Minnesota/Ontario Institute for Studies in Education at The University of Toronto/The Wallace Foundation. Retrieved from www.wallacefoundation.org/knowledge-center/school-leadership/key-research/documents/how-leadership-influences-student-learning.pdf.

Lipsey, M.W., Puzio, K., Yun, C., Hebert, M.A., Steinka-Fry, K., Cole, M.W., Roberts, M., Anthony, K.S., Busick, M.D. (2012*). Translating the statistical representation of the effects of education interventions into more readily interpretable forms.* (NCSER 2013-3000). Washington, DC: National Center for Special Education Research, Institute of Education Sciences, U.S. Department of Education.

McAvinue, L., & Weir, S. (2015). *The evaluation of DEIS at post-primary level: An update on trends over time in achievement and retention.* Report to the Department of Education and Skills. Dublin: Educational Research Centre.

McCombs, J. S., Augustine, C., Schwartz, H., Bodilly, S., McInnis, B., Lichter, D., & Cross, A. (2011). *Making summer count*. *How summer programs can boost children's learning*. Rand Education/The Wallace Foundation. Retrieved from http://www.rand.org/content/dam/rand/pubs/monographs/2011/RAND_MG1120.pdf

Meichenbaum, D. & Biemiller, A. (1998). *Nurturing independent learners: Helping students take charge of their own learning.* Newton, MA: Brookline Books.

Melhuish, E., Quinn, L., Sylva, K., Sammons, P., Siraj-Blatchford, I., Taggart, B. (2012). Preschool affects longer term literacy and numeracy: Results from a general population longitudinal study in Northern Ireland. *School Effectiveness and School Improvement, 24*(2), 234-250.

Molner, A., Smith, P., Zahorik, J., Palmer, A., Halbach, A., & Ehrle, K. (1999). Evaluating the SAGE program: A pilot program in targeted pupil-teacher reduction in Wisconsin. *Educational Evaluation and Policy Analysis, 21*(2), 165-177.

Mosteller, F. (1995). The Tennessee study of class size in the early school grades. *The Future of Children, 5*(2), 113-127.

Nye, B., Hedges, L.V., & Konstantopoulos, S. (2004). Do minorities experience larger lasting benefits from small classes? *The Journal of Educational Research, 98*(2), 94–100.

OECD. (2017). *Starting strong IV: Early childhood education and care data country note. Ireland.* Retrieved from https://www.oecd.org/edu/school/ECECDCN-Ireland.pdf

Pascal, C., & Bertram, T. (2013). *The impact of early education as a strategy in countering socio-economic disadvantage*. Centre for Research in Early Childhood (CREC). Retrieved from http://www.crec.co.uk/docs/Access.pdf

Penuel, W. R., Fishman, B. J., Yamaguchi, R., & Gallagher, L. P. (2007). What makes professional development effective? Strategies that foster curriculum implementation. *American Educational Research Journal*, *44*, 921–958.

Peske, H.G. & Haycock, K. (2006). Teaching inequality: How poor and minority students are short changed on teacher quality: A report and recommendations by the Education Trust. Retrieved from http://files.eric.ed.gov/fulltext/ED494820.pdf

Pianta, R., Howes, C., Burchinal, M., Bryant, D., Clifford, R., Early, D. & Barbarin, O. (2005). Features of pre-kindergarten programs, classrooms, and teachers: Do they predict observed classroom quality and child-teacher interactions? *Applied Developmental Science, 9*(3), 144-159.

Porter, A.C., Garet, M.S., Desimone, L., Yoon, S.K., & Birman, B.F. (2000). *Does professional development change teaching practice? Results from a three-year study.* Washington DC: US Department of Education, Office of the Under Secretary, Planning and Evaluation Service, Elementary and Secondary Division.

Quinn, D. M., Lynch, K., & Kim, J. S. (2014). *Replicating the moderating role of income status on summer school effects across subject areas: A meta-analysis*. Paper presented at the Society for Research on Educational Effectiveness (SREE), Washington, DC.

Ready, D.D. (2008). *Class-size reduction: Policy, politics, and implications for equity.* Teachers College Columbia. Retrieved from http://www.equitycampaign.org/publications/safeguarding-students-educational-rights/6863_Ready_Class_Size_Research_Review-(1).pdf

Reynolds, A.J., Richardson, B.A., Hayakama, M., Lease, E.M., Warner-Richter, M., Englund, M.M., … Sullivan, M. (2014). Association of a full-day vs. part-day preschool intervention with school readiness, attendance and parent involvement. *Journal of the American Medical Association, 213*(20), 2126-2134.

Reynolds, A.J., Temple, J.A., White, B.A.B., Ou, S.R. & Robertson, D.L. (2011). Age-26 cost-benefit analysis of the Child-Parent Center early education program. *Child Development*, 82(1), 379-404.

Rubie, C. M. (2007). Classroom interactions: exploring the practices of high and low-expectations teachers. *British Journal of Educational Psychology, 77*, 289-306.

Ruhm, C., Magnuson, K.A., & Waldfogel, J. (2007). Does prekindergarten improve school preparation and performance? *Economics of Education Review*, *26*(1), 33-51.

Ryan, S. (1999). *The Home-School-Community Liaison scheme. Summary evaluation report*. (Revised edition). Dublin: Educational Research Centre.

Sammons, P., Hillman, J., & Mortimer, P. (1995). *Key characteristics of effective schools: A review of school effectiveness research.* London: Office of Standards in Education and Institute of Education.

Schanzenbach, D.W. (2014). *Does class size matter?* Boulder, CO: National Education Policy Centre.

Scher, L. & O'Reilly, F. (2009). Professional development for K12 math and science teachers: What do we really know? *Journal of Research on Educational Effectiveness*, 2(3), 209-249.

Schweinhart, L.J. (2013). Long-term follow-up of a preschool experiment. *Journal of Experimental Criminology*, 9(4), 389-409.

See, B.H. & Gorard, S. (2013). *What do rigorous evaluations tell us about the most promising parental involvement interventions? A critical review of what works for disadvantaged children in different age groups*. Nuffield Foundation. Retrieved from

http://www.nuffieldfoundation.org/sites/default/files/files/What_do_rigorous_evaluations_tell_us_about_the_most_promising_parental_involvement_interventions.pdf

Shin, I.S. & Chung, J.Y. (2009). Class size and student achievement in the United States: A meta-analysis. *KEDI Journal of Educational Policy, 6*(2), *3-19.*

Shulman, L.S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher, 15*(2), 4-14.

Sims, D. (2008). A strategic response to class size reduction: Combination classes and student achievement in California. *Journal of Policy Analysis and Management, 27*(3), 457-478.

Slavin, R.E., Lake, C., Chambers, B., Cheung, A., & Davis, S. (2010). Effective reading programs for the elementary grades: A Best-evidence synthesis. *Review of Educational Research, 79*(4), 1391-1466. Retrieved from www.bestevidence.org/word/elem_read_Jan_22_2010.pdf

Sofroniou, N., Archer, P., & Weir, S. (2004). An analysis of the association between socioeconomic context, gender and achievement. *Irish Journal of Education, 35,* 58-72.

Sorhagen, N.S. (2013). Early teacher expectations disproportionately affect poor children's high school performance. *Journal of Educational Psychology, 105*, 465-477.

Spizer, B., & Aronson, A. (2015). Minding and mending the gap: Social psychological interventions to reduce educational disparities. *British Journal of Educational Psychology. Annual Review, 85,* 1-18.

Sun, M., Penuel, W.R., Frank, K.A., Gallagher, H.A., & Youngs, P. (2013). Shaping professional development to promote the diffusion of instructional expertise among teachers. *Educational Evaluation and Policy Analysis, 35*(3), 344-369.

Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I. & Taggart, B. (2004). *The Effective Provision of Pre-school Education (EPPE) project. Findings from pre-school to end of Key Stage 1*. Sure Start. Retrieved from https://www.ioe.ac.uk/RB_Final_Report_3-7.pdf

Tauber, R.T. (1997). *Self-fulfilling prophesy: A practical guide to its use in education.* London: Praeger.

Terzian, M., Moore, K. A. & Hamilton, K. (2009). Effective and promising summer learning programs and approaches for economically-disadvantaged children and youth: A white paper for the Wallace Foundation. Child Trends/The Wallace Foundation. Retrieved from http://www.wallacefoundation.org/knowledge-center/documents/effective-and-promising-summer-learning-programs.pdf

Timperley, H.S. & Parr, J.M. (2007). Closing the achievement gap through evidence-based inquiry at multiple levels of the education system. *Journal of Advanced Academics, 19*, 90-115.

Timperley, H.S. & Phillips, G. (2003). Changing and sustaining teachers' expectations through professional development in literacy. *Teaching and Teacher Education, 19*, 627-641.

Timperley, H., Wilson, A., Barrar, H., & Fung, I. (2007). *Teacher professional learning and development: Best evidence synthesis iteration.* Wellington: Ministry of Education.

UNICEF (2008). *The child care transition: A league table of early childhood education and care in economically advanced countries*. Retrieved from http://www.unicef-irc.org/publications/pdf/rc8_eng.pdf

Van Den Berg, L., Denessen, E., Hornstra, L., Voeten, M., & Holland, R.W. (2010). The implicit prejudiced attitudes of teachers: relations to teacher expectations and the ethnic achievement gap. *American Educational Research Journal, 47*, 497-527.

Van Driel, J.H., Meirink, J.A., van Veen, K., & Zwart, R.C. (2012). Current trends and missing links in studies on teacher professional development in science education: A review of design features and quality of research. *Studies in Science Education, 48*(2), p. 129-160.

Vescio, V., Ross, D., & Adams, A. (2008). A review of research on the impact of professional learning communities on teaching practice and student learning. *Teaching and Teacher Education, 24*, 80-91.

Wayne, A. J., Yoon, K. S., Zhu, P., Cronen, S., & Garet, M. S. (2008). Experimenting with teacher professional development: Motives and methods. *Educational Researcher, 37*(8), 469–479.

Weiland, C. & Yoshikawa, H. (2013). Impacts of a prekindergarten program on children's mathematics, language, literacy, executive function, and emotional skills. *Child Development, 84*(6), 2112-2130.

Weinstein, R.S. (2002). *Reaching higher: The power of expectations in schooling.* Cambridge, MA: Harvard University Press.

Weissenrieder, J., Roesken-Winter, B., Schueler, S., Binner, E., & Blomeke, S. (2015). Scaling CPD through professional learning communities: Development of teachers' self-efficacy in relation to collaboration. *ZDM Mathematics Education, 47,* 27-38.

Weir, S. (1999). *An analysis of the application variables used to select schools for the Breaking the Cycle scheme*. Dublin: Educational Research Centre.

Weir, S. (2003). *The evaluation of Breaking the Cycle: A follow-up of the achievements of 6th class pupils in urban schools in 2003.* Report to the Department of Education and Science.

Weir, S. (2004). *A commentary on the implementation of Giving Children an Even Break*. Report to the Educational Disadvantage Committee. Dublin: Educational Research Centre.

Weir, S. (2006). *A report on the procedures used to identify post-primary schools for inclusion in the School Support Programme under DEIS.* Dublin: Educational Research Centre.

Weir, S., & Archer, P. (with O'Flaherty, A., & Gilleece, L.) (2011). *A report on the first phase of the evaluation of DEIS.* Dublin: Educational Research Centre.

Weir, S., Archer, P., & Millar, D. (2009). *Analysis of English reading and mathematics achievements in schools in the rural dimension of the School Support Programme*. Report to the Department of Education and Science. Dublin: Educational Research Centre.

Weir, S., Archer, P., Pembroke, L., & McAvinue, L. P. (2007). *Report on the evaluation of some aspects of giving children an even break*. Report to the Department of Education and Science. Dublin: Educational Research Centre.

Weir, S., & Denner, S. (2015). *A survey of the socioeconomic profile of all primary schools in 2014 in the context of developing a new resource allocation model to support children with special educational needs*. Report to the Department of Education and Skills / National Council for Special Education. Dublin: Educational Research Centre.

Weir, S., & Denner, S. (2016). *A survey of the socioeconomic profile of all post-primary schools in 2014 in the context of developing a new resource allocation model.* Report to the Department of Education and Skills / National Council for Special Education. Dublin: Educational Research Centre.

Weir, S., Errity, D., & McAvinue, L. (2015). Factors associated with educational disadvantage in urban and rural areas. *The Irish Journal of Education, 40*, 94-110.

Weir, S., & McAvinue, L. (2012). *The impact of DEIS on class size in primary schools.* Report to the Department of Education and Skills. Dublin: Educational Research Centre.

Weir, S., McAvinue, L., Moran, E., & O'Flaherty, A. (2014). *A report on the evaluation of DEIS at second level.* Dublin: Educational Research Centre.

Weir, S., Milis, L., & Ryan, C. (2002). *The Breaking the Cycle scheme in urban schools: Final evaluation report*. Dublin: Educational Research Centre.

Weir, S. & Moran, E. (with O'Flaherty, A.). (2014). *The organisation of the delivery of learning support and resource teaching in a sample of urban primary schools serving disadvantaged pupils.* Dublin: Educational Research Centre.

Wen, X., Leow, C., Hahs-Vaughn, D.L., Korfmacher, J. & Marcus, S.M. (2012). Are two years better than one? A propensity score analysis of the impact of Head Start program duration on children's school performance in kindergarten. *Early Childhood Research Quarterly, 27*(4), 684-694.

Wenglinksky, H. (2002). How schools matter: The link between teacher classroom practices and student academic performances. *Educational Policy Analysis Archives, 10*(12).

Word, E., Johnston, J., Bain, H., Fulton, B., Zaharias, J., Achilles, C., … Breda, C. (1990). *The state of Tennessee's student/teacher achievement ratio (STAR) project: Final summary report 1985–1990.* Nashville: Tennessee State Department of Education.

Yoon, K. S., Duncan, T., Lee, S. W.-Y., Scarloss, B., & Shapley, K. (2007). *Reviewing the evidence on how teacher professional development affects student achievement (Issues & Answers Report, REL 2007–No. 033).* Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest.

Yoshikawa, H., Weiland, C., Brooks-Gunn, J., Burchinal, M.R., Espinosa, L.M., Gormley, W.T., … Zaslow, M.J. (2013). *Investing in our future: The evidence base on preschool education*. Society for Research in Child Development and Foundation for Child Development. Retrieved from http://fcd-us.org/sites/default/files/Evidence%20Base%20on%20Preschool%20Education%20FINAL.pdf

Zyngier, D. (2014). Class size and academic results, with a focus on children from culturally, linguistically and economically disenfranchised communities. *Evidence Base, 1,* 1-23.