



An Roinn Oideachais  
Department of Education



Institiúid Oideachais  
Institute of Education

# **Enabling Family Engagement to Support Literacy, Digital Literacy and Numeracy Development for All Children**

## A Review of the Literature

Prepared by Siún Nic Mhuirí, Thérèse Farrell, Geraldine French, Marlene McCormack and Caoimhe Shiel, Institute of Education, Dublin City University, for the Department of Education

### **Author Note**

Siún Nic Mhuirí <https://orcid.org/0000-0001-5008-5573>

Thérèse Farrell <https://orcid.org/0000-0002-2562-2645>

Geraldine French <https://orcid.org/0000-0002-7075-038x>

Marlene McCormack <https://orcid.org/0000-0002-4545-3412>

Caoimhe Shiel <https://orcid.org/0000-0001-6855-7938>

### **Suggested Citation**

Nic Mhuirí, S., Farrell, T., French, G, McCormack, M & Shiel., C. (2022). *Enabling family engagement to support literacy, digital literacy and numeracy development for all children. A review of the literature*. Department of Education (Ireland).

## Summary

This report synthesizes recent research on family engagement in literacy, digital literacy and numeracy development. ‘Family engagement’ describes the dynamic practices and processes that [early childhood settings] schools and families engage in as they work to promote children’s development (Smith et al., 2021). Research consistently indicates that family engagement has a positive impact on children’s academic outcomes (Wilder, 2014).

- Family engagement during school/setting transitions has been identified as an important factor in children’s later academic performances (Bierman et al., 2019). Whilst most research focuses on younger children, the literature indicates that communication between early childhood educators, teachers and family, and between parents and children remains very important for second-level students (Park & Holloway, 2013). In the Irish context considerable attention to transitions have been a key theme within the Delivering Equality of Opportunity in Schools (DEIS) programme (Department of Education and Science, 2005). DEIS aims to assist schools and their communities to achieve equality in educational participation and outcomes. As part of the revised DEIS a promising development provides greater emphasis on the role of the Home School Community Liaison Scheme in supporting transitions from early years to primary, primary to post-primary and post-primary to further and higher education (DE, 2019).
- The effect sizes for school-based activities, such as attendance at parent-teacher meetings are much smaller than for home-based family-engagement practices (Jeynes, 2018). Parental style, the extent to which a parent demonstrates a supportive and helpful parenting approach (Jeynes, 2012), and discussion of setting/school matters and emphasis on education (Tan et al., 2020), have been found to be positively associated with student achievement. High expectations, the understanding that family members will make their best effort in academic tasks has been consistently found to be the aspect of family engagement that is most highly associated with positive academic outcomes (Jeynes, 2018; Wilder; 2014; Tan et al., 2020). Parental pessimism, where parents feel that things in general would not go their way, was found to be a significant predictor of mathematics performance (Goforth et al., 2014).
- Reading with children [from birth] and other home literacy activities have been found to have positive associations with children’s academic performance (Van Voorhis et al., 2013). The research shows mixed findings in relation to the impact of homework (c.f., Higgins & Katsipataki, 2015; Wilder, 2014). If homework is given to school-aged children, it should be curriculum-linked, facilitate two-way communication between teachers and parents, and allow all parents to participate regardless of their knowledge of the subject (Epstein et al., 2018).
- Early childhood educator and teacher education can successfully support positive attitudes towards, and knowledge of, family engagement practices (Smith & Sheridan, 2019). A willingness and preparedness to engage with parents in culturally responsive ways is essential (Anderson et al., 2017; Smith & Sheridan, 2019). In the Irish context the *Diversity, Equality and Inclusion Charter and Guidelines for Early Childhood Education and Care* (DCYA, 2026) are broadly oriented towards equity through a

comprehensive Anti-bias approach to ECEC practice, the document makes reference to literacy in the context of diverse family backgrounds. The effects of comprehensive Anti-bias training on ECEC educators' behavioural change and reference to the 'variety of strategies [adults use] to support classroom communication with children whose primary language is not English is documented (Duffy and Gibbs, 2013, p.64). Collegial leadership in ECEC settings and schools, involving egalitarian, supportive behaviours with clearly-communicated expectations for high performance, has been shown to be important for family engagement (Smith et al., 2021).

- Family-setting partnership interventions have been shown to have a significant positive effect on children's academic outcomes (Jeynes, 2018). Genuine collaboration, and two-way communication between ECEC settings, schools and families have been found to be key to such partnerships (Jeynes, 2018; Epstein et al., 2018; Smith et al., 2019).
- Sufficient consideration should be given to the factors that affect parents' ability to engage: e.g., substandard accommodation, overcrowding, halting sites (Travellers), emergency accommodation, direct provision, family homelessness, parental illiteracy, lack of access to support services, poverty leading to and exacerbating digital inequality, to name some impediments. Pursuing equity in terms of parental involvement necessitates that existing parental resources are acknowledged by teachers and policymakers in a meaningful way (Anthony-Newman, 2019).
- Family literacy, shared and dialogic reading programmes have been shown to have a positive impact on children's outcomes (van Voorhis et al., 2013), particularly in areas with socioeconomic challenges (Fikrat-Wever et al., 2021). While there is less research on numeracy, there is some evidence that home mathematics activities can have positive impacts on children's outcomes (van Voorhis et al., 2013). Bilingual family literacy programmes (Anderson et al., 2017) and programmes to support parents' learning of English have been found to have a positive effect on children's academic outcomes (Jeynes, 2012).

## Recommendations

*All recommendations address the pillar of **Enabling parents and communities**. Other relevant pillars are included in brackets.*

All ECEC settings/schools are advised to develop initiatives that encourage parental and family engagement throughout the transition process (Bierman et al., 2019; Powell et al., 2012). This includes from homes to ECEC settings as well as ECEC settings to schools. In general, family-engagement programmes addressing literacy, digital literacy and numeracy should be developed using a partnership approach to address local needs (Jeynes, 2018; Smith et al., 2019). **[Curriculum and the learning experience]**

Early childhood educators and teachers must recognise that all families can, and do, support the education of their children. Positive attitudes toward family engagement and sense of efficacy in relation to family-engagement practices across literacy, digital literacy and numeracy must progress through initial ECEC and teacher education and professional development (Smith & Sheridan, 2019). Relevant elements of such education should include: communication strategies, cultural awareness/working with diverse populations, family-engagement attitudes/beliefs, and parent–educator relationships (Smith & Sheridan, 2019; Anthony-Newmann, 2018). ECEC educators and teachers should understand the importance of cultivating a two-way flow of information between families and settings/schools.

**[Teachers and ECEC PL/D]**

Setting leaders play a pivotal role in developing family engagement by setting policy and by creating environments that support effective family engagement. Professional development should emphasize those aspects of collegial leadership which have been found to promote trust and a sense of community, i.e., establishing clear expectations, communicating concern for the welfare of EC educators and teachers, and focusing on education (and care) issues, and explore how this might be extended to family engagement practices (Smith et al., 2021). Cultivating effective family engagement should be considered as central to effective leadership of settings/schools. **[School and ECEC leadership, Teachers and ECEC PL/D]**

It is essential that ECEC educators and teachers are enabled to engage in effective, authentic and respectful relationships with parents (Ma et al., 2015). Settings should develop culturally-responsive family engagement practices to encourage the participation of all families. Such programmes might include bilingual family literacy programmes and/or provision of language-support for parents where appropriate (Anderson et al., 2017; Jeynes, 2012).

**[Curriculum and the learning experience, Students with additional learning needs]**

Family-engagement interventions should target home-based activities in addition to setting/school-based involvement (Epstein et al., 2018; Jeynes, 2018; Tan et al., 2020; Van Voorhis et al., 2013). Initiatives involving shared reading and dialogic conversations have been found to be effective (Jeynes, 2018; Tan et al., 2020). Initiatives involving conversational strategies are proposed by Van Voorhis et al. (2013). Mathematics programmes, in particular, should include growth-mindset messages for parents and children (Goforth et al., 2014). Such an approach will be grounded in two-way communication between families and school/setting staff and will use evidence-based activities in flexible ways to suit the local context. **[Curriculum and the learning experience, Students with additional learning needs]**

Technology and digital tools can be used to support family engagement in their children’s learning (Van Voorhis et al., 2013). Technology may support the two-way flow of information between parents and ECEC educators and teachers and/or the provision of family engagement programmes and resources. **[Curriculum and the learning experience]**

## Introduction

Article 41.1 of the Irish constitution recognises the family as the “primary and natural educator of the child”. The role of parents in children’s learning from birth is recognised in national policy frameworks and curriculum documents (Centre for Early Childhood Development and Education, 2006; Department of Education and Skills [DES], 2015; Government of Ireland, 1999; National Council for Curriculum and Assessment [NCCA], 2009). Enabling parents and communities to support children’s literacy and numeracy development was identified as a central pillar of the National Strategy to Improve Literacy and Numeracy among Children and Young People (DES, 2011). The interim review of the strategy describes how it aimed to stimulate a national information campaign on the role of parents and communities in supporting literacy and numeracy development, and how different agencies have sought to provide advice and information to parents (DES, 2017). The review states that there is still scope for “the flow of information from schools to parents” to be improved (p. 24). While definitions of parental involvement are still debated (Wilder, 2014), it is widely recognised that effective parental engagement involves more than a one-way flow of information from education providers to parents. Epstein, a seminal author in the field, proposes the use of the term ‘school, family and community partnership’ instead, to recognise the spheres of influence on a child’s learning and development (Epstein et al., 2018). Strong partnerships across these spheres, including early childhood settings, are characteristic of high-performing settings/schools, regardless of family and local economic disadvantages (David, Teddlie & Reynolds, 2000, as cited in Epstein et al., 2018). Other authors suggest that the distinction between ‘involvement’ and ‘engagement’ is useful. Models of parent involvement tend to emphasize what parents can do to support ECEC setting/school goals, where goals are established solely by educators, who are responsible for all decision-making (Goodall & Montgomery, 2014). Parent engagement entails mutually determined educational goals, shared power, and decision-making based on an understanding that parents also have valuable knowledge to contribute to their children’s learning (Pushor & Ruitenberg, 2005).

Parent engagement with children’s learning encompasses much more their involvement in ECEC setting/school activities and has the potential to impact outcomes to a greater extent (Jeynes, 2018). We understand the term family engagement as involving the “active, interactive, and dynamic practices and processes used by families and schools to promote children’s development” (Smith et al., 2021, p. 50). We recognise the diversity of

families within the education system and use the term family engagement to include parents, siblings, grandparents, stepparents, foster parents or any significant caregiver. This literature review responds to the following research questions:

### **Research questions**

1. What aspects of family engagement support the development of children's literacy, digital literacy and numeracy?
2. What is the nature of successful family engagement programmes or initiatives that support children's literacy, numeracy and digital literacy?

### ***Overview of Studies***

In total, 28 studies were included in this review. These included 12 meta-analyses. Seven large-scale or randomised control studies were included, including two studies with a nationally (USA) representative sample (Galindo & Sheldon, 2012; Park & Holloway, 2015). Grey literature, split into two studies examining the impact of family involvement on literacy and mathematics outcomes respectively, was also included (Van Voorhis et al., 2013a and b). Seven systematic literature reviews or small-scale empirical studies were also included as they gave insight into important topics not covered by meta-analytic literature, e.g., involvement of immigrant parents. In line with the bibliometric analysis on parental involvement literature conducted by Addi-Racah et al. (2021), the included studies have diverse psychological and sociological perspectives, but are largely situated in urban- and US-contexts. Teacher-parent communication around formative and summative assessment results is to be an important part of Irish educational policy (c.f., DES, 2011; 2015) but no studies were included which address this topic. While it is recognised that family engagement plays an important role for second-level students (Park & Holloway, 2013), and also has the potential to support digital literacy (Kumpulainen & Gillen, 2017), few studies were found which addressed these topics. In addition, while technology can serve as means to facilitate two-way communication between settings and families, little high-quality research examining this topic was identified. For further detail of reviewed studies, see the Appendix for Research Strategy and Tabulation of Results. Two handbooks published since 2011 were also consulted (Epstein et al., 2018; Sheldon & Turner-Vorbeck, 2019). In this report, findings are reported using the terminology of the original research as much as possible. The themes

centre on family engagement and children's academic achievement and engaging diverse families.

### **Family Engagement and Children's Academic Achievement**

The positive relationship between parental involvement and children's academic achievement is confirmed in the reviewed studies (c.f. Higgins & Katsipataki, 2015; Jeynes, 2018). Galindo and Sheldon (2011) specify the link between early achievement gains and family involvement, arguing that students whose parents were more involved at school or had higher educational expectations demonstrated greater achievement in reading and mathematics skills at the end of kindergarten. A synthesis of 448 studies found that parental involvement in a student's education has a small to moderate positive association with academic achievement, as well as academic motivation and engagement (Barger et al., 2019). In Wilder's (2014) meta-synthesis of nine meta-analyses, the relationship between parental involvement and academic achievement was found to be positive, regardless of definitions or measures used. In addition, the positive relationship held across race and across all age levels.

It is possible to differentiate between family-based and setting/school-based engagement. While overt forms of parental support for schoolwork are important, the home-environment, and subtler forms of parental involvement, are overwhelmingly the most important context for parental engagement (c.f., Jeynes, 2018; Tan et al., 2020). Below, we use the categorisation of family involvement activities described by Van Voorhis et al. (2013) to organise our findings: *Learning activities at home*, *Family Involvement at School*, *School Outreach to Engage Families* and *Supportive Parenting Practices*. The final section addresses considerations relevant to *Engaging Diverse Families*.

#### ***Learning Activities at Home***

Activities to promote children's learning may occur in the home, or in other locations such as playgrounds, libraries or museums (Van Voorhis et al., 2013).

***Reading with Children.*** The importance of families reading with children is supported by Tan et al. (2020) and this aspect of family-based engagement was found to have the second largest effect size (after high expectations) according to Jeynes' (2018) meta-analysis. In their review, Van Voorhis et al. (2013) also found moderate effect sizes for reading interventions and home literacy activities. These authors describe how effective approaches to reading with young children go beyond having the children passively listen to the adult reading. Instead, their review finds empirical evidence for the effectiveness of



dialogic and shared reading (discussed further below). Similarly, Epstein (2018) highlights book reading at home as an effective form of family involvement in both the early years and primary class levels. At second level, schools which communicate frequently with parents regarding reading achievement perform better on standardized tests (McNeal, 2014; Parcel & Dufur, 2001; Simon, 2004, as cited in Epstein, 2018)

**Homework.** There are conflicting findings in relation to how parental involvement in monitoring and assisting with homework relates to student achievement. While Jeynes' (2018) synthesis of six meta-analyses found evidence of a positive relationship, Wilder's (2014) synthesis of nine meta-analyses found no evidence of such a relationship. In fact, Wilder's analysis details some meta-analyses where homework assistance was found to be negatively correlated with student achievement, perhaps arising from the fact that students who are struggling academically may be more likely to seek and receive most assistance with homework. Smith et al. (2019) similarly found that within the context of family-school partnerships, homework involvement was not found to significantly impact children's academic or social-behavioural functioning. Higgins and Katsipataki's (2015) findings indicate variation in the perceived impact of homework on children's learning outcomes, recommending further research in this area, although it was noted that reading for homework was an exception to this perception. Ma et. al (2015) similarly found that involvement with homework, as part of home supervision, played an important role in parental engagement.

In their meta-analysis of 28 studies, Fan et al. (2017) report a positive, but weak, relationship between homework and academic performance in mathematics and science. This relationship was stronger for primary and high school students, and weakest for middle school students. Epstein et al. (2018) maintain that while there is no justification for homework as punishment, other valid instructional, communicative and political purposes can be served by designing appropriate homework (p.328). They developed, and evaluated, the Teachers Involve Parents in Schoolwork programme to enhance parents' understanding of classroom learning and promote positive discussions about schoolwork at home. They propose an approach to homework which is curriculum-linked, facilitates two-way communication between teachers and parents, and allows all parents to participate regardless of their familiarity or knowledge of the subject.

### ***Family Involvement at ECEC Settings/School***

Family involvement at ECEC setting/school includes activities such as attendance at parent-teacher meetings or volunteering to participate in setting/school activities. While

empirical research confirms that home-based family engagement activities have benefits for children's learning, findings from research on school-based family involvement is more mixed (Van Voorhis et al., 2013a). Components of family involvement at school which have been found to have a positive effect on children's learning include: *partnership with teacher; communication between parents and teacher/school, parental participation and attendance and drawing from community resources* (Jeynes, 2018). Of these components, partnership with teachers was found to have the largest effect size (Jeynes, 2018) and is discussed in more detail later. The importance of two-way communication between parents and schools is emphasized in many studies (c.f., Epstein et al., 2018; Jeynes, 2018; Smith et al., 2019; Smith & Sheridan, 2019). For example, Ma et. al (2015) noted that effective parental involvement includes home-school connection, the establishment of a channel of communication for parents to contact educators regarding their children's academic performance, where parents can ask questions, provide information to educators and obtain school information. The importance of the wider community is also highlighted in other work (c.f., Epstein et al., 2018, Anthony-Newman, 2019). For example, Van Voorhis et al. (2013a) describe how drawing on community resources in the form of recruiting and supporting community volunteers to act as tutors can have a positive impact on children's literacy outcomes. Community engagement is discussed more fully in French et al. (2022) in this suite of literature reviews to underpin the new Literacy, Digital Literacy and Numeracy Strategy.

***ECEC Setting/School Personnel.*** Some early childhood educators and teachers have negative views of parents' role in children's education and do not feel prepared to communicate with families (Smith & Sheridan, 2019). Educators and teachers may have limited insight into home-based family engagement and may perceive parents to be less-involved if they do not witness engagement in school activities (Anthony-Newmann, 2019). It is vital that educators and teachers have the knowledge and disposition to collaborate with parents in culturally-responsive ways and to support home-based involvement (Smith & Sheridan, 2019). Developing educators and teachers' capacity to engage in effective, authentic and respectful relationships with parents is crucial (Ma et. al., 2015). The literature suggests that educators and teachers should conduct home visits to learn more about home-based engagement (Smith & Sheridan, 2019). Teacher-training programmes have been found to have a significant positive effect on teachers' family-engagement outcomes, i.e., their attitudes, knowledge, and practices (Smith & Sheridan, 2019). The following components of teacher education programmes were found to have significant effects: collaborative planning and problem solving, communication strategies, cultural awareness/practices, family-

engagement attitudes/beliefs, and parent–teacher relationships. Their analysis also reveals that while teacher outcomes were not moderated by gender or ethnicity, the effects were less robust for high-school teachers than for early childhood, elementary, and special education teachers, possibly arising from greater expectations of teachers to engage parents in earlier years of schooling.

Setting leaders (from early childhood on) and principals employing collegial leadership engage in egalitarian, supportive, behaviours while also laying the groundwork for high performance by communicating expectations clearly to school personnel (Smith et al., 2021). Such behaviours promote trust and may be integral to creating a sense of community. In two randomized control trials, Smith et al. (2021) used teacher reports to investigate the relationship between family engagement and principal collegial leadership. They found a positive relationship exists which remained significant when controlled for student characteristics. Principal collegial leadership at baseline was a significant predictor of family engagement at the end of the year. Aspects of leadership found to be significant included establishing clear expectations, concern for the welfare of teachers, clear standards for performance and objective, meaningful evaluations. Smith et al. (2021) speculate that principals indirectly influence family engagement through their shaping of school climate. They argue that current models of family engagement do not emphasize leadership sufficiently and suggest that definitions of collegial leadership should be extended to explicitly include relationships with parents, rather than the current focus on relationships with teaching personnel.

### ***ECEC Setting/School Outreach to Engage Families***

Outreach includes formal family engagement programmes, strategies and practices that ECEC settings/schools use to engage families. Meta-analyses by Jeynes (2012) and Smith et al. (2019) found that family-school partnership interventions had a significant positive effect on children’s academic outcomes. Smith et al. (2019) identify the key relational and structural components of successful programmes as: home-based involvement, ECEC setting/school to home communication, bi-directional communication and collaboration. Their analysis indicates that the effects of some intervention components were moderated by age, e.g., bi-directional communication and behavioural support were especially impactful for older children. Jeynes (2012) notes that initiatives at kindergarten and elementary level far outnumbered initiatives at second level. While not statistically significant, he found a slight positive association between the length of the parental

engagement programme and positive academic outcomes. Van Voorhis et al. (2013a) draw attention to a counterintuitive finding on the inverse relationship between the amount of time parents spent in training programmes and children's outcomes. Shorter workshops (1 to 2 hours) were found to result in stronger effects for children, possibly due to more focussed or purposeful activities. They suggest that web-based support, with downloadable materials, may have the potential to provide sufficient, focused support for parents to engage in meaningful home literacy activities. Similarly, Higgins and Katsipataki (2015) recommend schools implement "a programme of regular short (an hour or so) but focused workshops over a limited period (ten weeks or so) which boosts parents' confidence and gives them practical activities they can undertake with their children in literacy or mathematics" (p.287). At second level, openly communicating and engaging with parents is particularly important in enhancing parent's self-efficacy and understanding of their role in promoting student achievement, as well as providing practical information regarding advancement to third level education (Park & Holloway, 2013, p.117).

***Family Literacy Programmes.*** Five meta-analyses examined in the area of home and family literacy programmes observed a range of average effects- from two to eight months, additional progress in reading outcomes (Higgins & Katsipataki, 2015 p.284). This wide range of results may be due to the variety of family literacy programmes available. General approaches of parental involvement, targeted interventions for families in need, and home and family literacy interventions resulted in additional gain for children's educational outcomes. Shared reading programmes, where an adult reads to a child or small group of children, were found to have the greatest effect size in Jeynes' (2012) meta-analysis. This finding is supported by the work of Van Voorhis et al. (2013) who also draw attention to the effect of dialogic reading programmes. Dialogic reading is a specific, interactive approach where the adult acts as a guide and facilitates the child in becoming the storyteller (p.10). Strategies include asking the child to recall or retell a story, or to make connections to their own experiences. Children at risk of low achievement in language and literacy (due to low family income or low levels of maternal education) appear to benefit less or respond less quickly to dialogic reading interventions. Van Voorhis et al. (2013) note that videos have been found to be effective in supporting parents in implementing dialogic reading and propose that multiple forms of information on dialogic reading should be made available. These authors further propose that there is also enough empirical evidence to support the "power of rich, cognitively demanding family conversations in book reading and family

storytelling on children's language and literacy development" (p. 17). They contend that conversational strategies, as well as specific reading readiness skills, should be the focus of family literacy activities with young children.

de Bondt, Willenberg and Bus's (2020) meta-analysis of free book giveaway programmes were found to further foster shared reading at home, positively promoting children's home literacy environment. Subsequently, increased interest in reading and children scoring higher on measures of literacy-related skills prior to and during the early years of school were recorded. Higher intervention effects were reported in low-SES families, providing an increased number of age-appropriate books in the home (p.366). Free book giveaway programmes may contribute to a "snowball effect" (Raikes et al., 2006) resulting in increased early language and literacy skills, children's increased interest in reading and may further motivate parents to maintain book reading routines at home (de Bondt, Willenberg & Bus, 2020). Book giveaway programmes are also a feature of effective home/community collaboration which is explored in French et al. (2022).

Bilingual family literacy programmes were discovered to have a positive effect on young children's language and learning development, along with other benefits. Anderson et al. (2017) reviewed the impact of a range of these programmes in the early years. Families' participation in these programmes led to a significant increase in young children's early literacy knowledge in the dominant language alongside the promotion and maintenance of home language (pp.651-652). Bilingual family literacy programmes were found to be particularly effective within diverse communities. In Jeynes' (2012) meta-analysis, English as a second language programmes, where parents learn English, were also found to have positive effects on student achievement, but this was not statistically significant. Such language support programmes may also be useful in the case where children are attending Irish-medium schools but parents' Irish language competence is low.

In low SES setting, family literacy programmes proved effective, particularly programmes which focused on a limited number of skills and activities, and where training occurred in a single setting (Fikrat-Wever et al., 2021). These programmes expose children to stimulating home literacy environments, which improves literacy development (p. 596). Researchers found that family literacy programmes expose children to rich language through the use of books, resulting in improved vocabulary and comprehension skills (p.597).

***Family Mathematics Programmes.*** In their study of over 700 children living in poverty, Goforth et al. (2014) established that, in line with previous research, reading achievement was the most significant predictor of mathematics achievement. They suggest that family factors may have an indirect effect on mathematics achievement through mediators such as reading achievement and general school or cognitive competence. More studies have been conducted on family engagement with literacy than mathematics. For young children, the literature generally supports a positive link between mathematics-focused activities at home and children's mathematics outcomes (Van Voorhis et al., 2013b). Some parents may have low mathematics achievement or a negative disposition toward the subject which makes it difficult for them to support their children (Boaler, 2015). In a small scale study, Vukovic et al. (2013) found evidence that children's mathematical anxiety mediated performance on higher-order mathematics tasks. Home-support and parental expectations for mathematics were found to influence performance on word problem-solving and pre-algebraic reasoning by reducing children's mathematics anxiety.

A number of existing parental-engagement programmes target mathematics and STEM more broadly (Milner-Bolotin & Marotto, 2018). These include the Equals and Family Math programme which aims to build conceptual understanding and problem-solving skills with hands-on activities. Initiatives targeting family mathematics may include home visits, workshops, parent-teacher meetings for targeted mathematics support, volunteering to support mathematics activities at school, family mathematics nights, interactive homework or other home-learning activities, projects and/or games/materials (Van Voorhis et al., 2013b). Van Voorhis et al. (2013b) report evidence of positive impact on mathematics test scores of a Family Mathematics Curriculum, a semester-long programme with families of low socioeconomic status in a Head Start centre, but other interventions have had mixed results. The Family Mathematics Curriculum is a structured mathematics course where parents and their preschool children attend family mathematics classes and are given materials to use at home. These authors speculate that interventions supporting family engagement in mathematics may be more useful and more effective for children and parents from low-income households. They summarise existing evidence to propose longer-term interventions that address specific mathematics content and consist of clear activities (rather than a menu of suggestions) with training or support workshops for parents. Drawing on Skwarchuk (2009), these authors note that parent-child interactions on more complex mathematics activities may

be more beneficial for children's mathematics outcomes, e.g., comparing and counting in twos rather than direct counting for preschool children.

***Partnership Programmes.*** After shared reading programmes, *emphasized partnership programmes* were found to have the second highest effect size in Jeynes' (2012) analysis. In such initiatives, "parents and teachers collaborate with one another as equal partners in any attempt to improve children's academic and/or behavior outcomes" (p. 728). While this description does not mention 'engagement' specifically, it aligns with understandings of parental engagement present in other literature (cf., Goodall & Montgomery, 2014). Examples of partnership projects are detailed in Epstein et al. (2018) who propose an 'Action Team Partnership' approach. In these projects, parents, school staff, the wider community and students, if appropriate, collaborate to plan and implement activities in the key areas of parenting, communicating, volunteering, learning at home, decision making, and collaborating with the community.

***Family engagement programmes and transition.*** Bierman et al. (2019) explored longitudinal associations between initial effects of the Research-based Developmentally Informed parent programmes and later benefits. A trial comprising 200 Head Start children found kindergarten gains across parenting and child skills. Four years later, these initial gains were sustained in terms of academic achievement and social-emotional competence across home and school contexts (Bierman et al., 2019). This research also highlights how initial gains in parent-child interactions resulted in later reduction in parenting stress and child-school adjustment. Engaging with parents is viewed as central to early intervention efforts designed to reduce socio-economic gaps in school readiness (Bierman et al., 2019). Parental engagement across the transition from public school kindergarten to first grade was also explored by Powell et al. (2012). They assessed children's literacy, language and mathematics skills prior to kindergarten entry and again at the end of first grade across four dimensions of parental involvement; school; cognitive stimulation at home; learning resources at home and out of school experiences. Across this three-year study, they discovered that increases in home learning resources from pre-kindergarten to kindergarten positively correlated with higher first-grade mathematics outcomes of children with lower pre-kindergarten-entry mathematics skills (Powell et al., 2012). Most of the meta-analyses identified in this search focus on the importance of parental engagement during the transition from pre-school to school. Of equal importance are transitions from primary to post-primary and beyond and how families can support children and young people during this process. In

the Irish context considerable attention to transitions have been a key theme under the Delivering Equality of Opportunity in Schools (DEIS) programme. The Department of Education and Science (DES) launched the DEIS programme in 2005 as a social inclusion action plan. DEIS aimed to assist schools and their communities to achieve equality in educational participation and outcomes. Furthermore, greater emphasis on the role of the Home School Community Liaison Scheme to reference their role in supporting transitions from early years to primary, primary to post-primary and post-primary to further and higher education has been achieved (DE, 2019). This is a promising development in Ireland.

### ***Supportive Parenting Practices***

Supportive parenting practices go beyond families' use of specific literacy/mathematics activities to include parent activities that support children's development and well-being more broadly. For example, parental style, the extent to which a parent demonstrates a supportive and helpful parenting approach, was found to have a significant positive effect on student achievement in Jeynes' (2012) meta-analysis. Tan et al. (2020) also found that discussion of school matters and emphasis on education were positively associated with student achievement. High expectations is a family-based component of engagement and is understood to mean that family members will make their best effort in academic tasks and often in life more generally (Jeynes, 2018). It has been consistently found to be the aspect of family engagement that is most highly associated with positive academic outcomes (Erdem & Kaya, 2020; Wilder; 2014; Tan et al., 2020). It is noted that for children at second level, family engagement is likely to be more subtle and nuanced than in the earlier years of schooling. For this reason, aspects of family-engagement like high-expectations appear to be particularly important (Smith & Sheridan, 2019). Tan et al. (2019) also note that the effects of parental involvement is mediated by grade level with second-level students appearing to benefit more from academic discussion when compared to younger children.

Goforth et al. (2014) found that parental pessimism, where parents feel that things in general would not go their way, was a significant predictor of mathematics performance. The authors note that children may adopt a similar pessimistic attitude toward their mathematics learning resulting in negative outcomes. There are salencies here with Boaler's (2015) work on the importance of growth mindsets in mathematics, and the role of teachers and parents in promoting same. People with growth mindsets believe that their efforts will result in learning and that they can improve their academic performance.



School attendance is a complex issue which can often involve a myriad of factors involving the individual student, family, and community. Poor attendance leads to negative social and behavioural outcomes across grade levels (Freeman et al., 2018). Family support was found to be a significant factor in high school children's attendance, particularly when the support was paired with specific interventions (Freeman et al, 2018). Related to the concept of attendance is that of risk of school failure. Petridou and Karagiorgi (2018) report positive associations between parent-child interactions in relation to school activities and students' achievement. This type of parental involvement was one of the strongest predictors of achievement (Petridou & Karagiorgi, 2018) and can combat the risk of school failure.

Research suggests that a decline at second level, both of teachers reaching out to families, as well as a decrease in family engagement with schools, occurs, but is not unavoidable (Seitsinger, 2018). An awareness of the importance of communicating with families regarding student achievement, as well as continuous professional development outlining best communication practices, is important for second level teachers. This can have practical implications when teachers at second level typically teach larger numbers of students daily compared to primary level. Smaller class sizes could help teachers more frequently communicate with the families of students. With regards to family engagement with education, at second level, Seitsinger et al. (2008) found that help with homework, as well as discussions surrounding career and third level education opportunities, were particularly impactful. Families respond and engage with teachers communicating with them on how to support their child's education, which in turn increases parent satisfaction with schools (Seitsinger et al., 2008, Seitsinger & Brand, 2012).

### **Engaging Diverse Families**

While diverse families are discussed in the literature, this largely addressed families living in poverty and those who did not speak the language of the school. To reduce achievement gaps, particularly within diverse communities, it is essential to engage all families in their children's education (Hands, 2012). The research of Tan et al. (2020) indicates that children of less-educated parents can benefit from higher levels of parental academic expectations via more home-based than school-based involvement, thus highlighting the need to develop strategies and programmes to support parents and families who face challenges to engagement. It has been noted, however, that parents of at-risk children are less likely to take up programme services (McCormick, et al., 2016). Hands'

research (2012) actively sought to promote family engagement by adopting an inclusive approach, irrespective of culture or socioeconomic status. Her research highlights that in order to promote agency among parents and school stakeholders regarding home-school collaboration, issues such as culture need to be considered. Goodall (2021) claims that much research on parents and parental engagement is founded on a deficit model where parents experiencing poverty are thought to be poor parents- not sufficiently engaged in their children's learning, or not engaged in the 'right' ways. Sufficient consideration should be given to the factors that affect parents' ability to engage: e.g., substandard accommodation, overcrowding, halting sites (Travellers), emergency accommodation, direct provision, family homelessness, parental illiteracy, lack of access to support services, poverty leading to and exacerbating digital inequality, to name some impediments. Anthony-Newman (2019) argues that pursuing equity in terms of parental involvement necessitates that existing parental resources are acknowledged by teachers and policymakers in a meaningful way and that family engagement efforts should strive to empower parents who are marginalized- this implies that engagement, rather than involvement, must be the guiding principle (Goodall, 2021).

In the Irish context the *Diversity, Equality and Inclusion Charter and Guidelines for Early Childhood Education and Care* (DCYA, 2026) are broadly oriented towards equity through a comprehensive Anti-bias approach to ECEC practice, the document makes reference to literacy in the context of diverse family backgrounds. Duffy and Gibbs (2013, p.64) documents the effects of comprehensive Anti-bias training on ECEC educators' behavioural change and refers to the 'variety of strategies [adults use] to support classroom communication with children whose primary language is not English'. Such supports include using symbols such as photos to represent actions and objects, using gestures to convey ideas, using both languages in describing materials and activities and repeating children's non-English words in English. Challenges for immigrant families go beyond language barriers as they may be unfamiliar with the local educational system and may have different understandings of their role in the education of their children compared to the locally-born parents and teachers (Anthony-Newman, 2019). For example, some immigrant families have been found to primarily see their parenting role as home-based where they may emphasize the maintenance of the first language and home-culture. In other cases, immigrant parents were found to prefer more formal written communications that focused on their child's academic performance rather than verbal communications of a more social nature (Anthony-

Newman, 2019). Immigrant parents may also share some of the challenges that working-class or other minority parents face. In the US context, it has been noted that school-based parental involvement activities are often dominated by white middle-class mothers with flexible work-schedules. The community or social networks formed in such activities can serve to help parents navigate the educational system and immigrant parents, and other marginalised groups, may not have access to such networks (Anthony-Newmann, 2019).

It is recognised that parents of children who are experiencing learning difficulties, and the children themselves, will benefit from supportive relationships with school staff. Higgin's & Katapataski's (2015) findings suggest that targeted interventions which provide more individualised support can particularly benefit families with children who have special educational needs.

## **Conclusion**

There are many reasons why some families may be less inclined to engage fully with school personnel or school activities. It does not follow that they do engage with their children's learning in the home or in other non-school contexts. Family engagement matters for children's outcomes. Schools and settings must work in culturally responsive ways with parents and (i) recognise that parents have much to contribute to their children's learning; (ii) work to establish a two-way flow of information between homes and schools; (iii) establish targeted interventions and programmes where necessary. Effective interventions will use partnership approaches where evidence-based activities (such as dialogic, shared reading or growth mindset messages) are adapted and used in flexible ways to suit the local context.

## References

### \*denotes literature included in the tabulation

- Addi-Racah, A., Dusi, P., & Seeberger Tamir, N. (2021). What can we learn about research on parental involvement in school? Bibliometric and thematic analyses of academic journals. *Urban Education*, <https://doi.org/10.1177/00420859211017978>
- \*Anderson, J., Anderson, A., & Sadiq, A. (2017). Family literacy programmes and young children's language and literacy development: Paying attention to families' home language. *Early Child Development & Care*, 187(3/4), 644–654.
- \*Antony-Newman, M. (2019). Parental involvement of immigrant parents: A meta-synthesis. *Educational Review*, 71(3), 362–381. <https://doi.org/10.1080/00131911.2017.1423278>
- \*Barger, M. M., Kim, E. M., Kuncel, N. R., & Pomerantz, E. M. (2019). The relation between parents' involvement in children's schooling and children's adjustment: A meta-analysis. *Psychological Bulletin*, 145(9), 855–890. <https://doi.org/10.1037/bul0000201>
- \*Bierman, K. L., McDoniel, M. E., & Loughlin-Presnal, J. E. (2019). How a preschool parent intervention produced later benefits: A longitudinal mediation analysis. *Journal of Applied Developmental Psychology*, 64, 101058. <https://doi.org/10.1016/j.appdev.2019.101058>
- Boaler, J. (2015). *The elephant in the classroom: Helping children learn and love maths*. Souvenir Press.
- Centre for Early Childhood Development and Education. (2006). *Síolta: The national quality framework for early childhood education*. Dublin: Centre for Early Childhood Development and Education.
- \*de Bondt, M., Willenberg, I. A., & Bus, A. G. (2020). Do Book Giveaway Programs Promote the Home Literacy Environment and Children's Literacy-Related Behavior and Skills? *Review of Educational Research*, 90(3), 349–375. eric.
- Department for Children and Youth Affairs. (2016). *Diversity, equality and inclusion charter and Guidelines for early childhood education and care*. Dublin: Government Publications.
- Department of Education and Skills. (2015). *A Framework for Junior Cycle*. Dublin: DES
- Department of Education and Skills. (2011). *National strategy to improve literacy and numeracy among children and young people 2011-2020*. (2011-2020). Dublin: DES
- Department of Education and Skills. (2017). *Interim review of national strategy to improve literacy and numeracy among children and young people (2011 – 2020)*. Dublin: DES
- Department of Education and Skills. (2019). *Circular 0016/2019, Home School Community Liaison Scheme*. Dublin: DES
- Duffy, M., & Gibbs, A. (2013). *Pre-school education initiative for children from minority groups. Evaluation report*. Dublin: Department of Children and Youth Affairs.

- Epstein, J. L., Sanders, M.G, Sheldon, S., Simon, B.S., Clark Salinas, K., Jansorn, N.R., VanVoorhis, F.L., Martin, C.S., Thomas, B.G., Greenfield, M.D., Hutchins, D.J., & Williams, K.J. (2018). *School, family, and community partnerships: Preparing educators and improving schools* (4th ed.). Routledge.
- \*Erdem, C., & Kaya, M. (2020). A Meta-Analysis of the Effect of Parental Involvement on Students' Academic Achievement. *Journal of Learning for Development*, 7(3), 367–383.
- \*Fikrat-Wevers, S., van Steensel, R., & Arends, L. (2021). Effects of Family Literacy Programs on the Emergent Literacy Skills of Children From Low-SES Families: A Meta-Analysis. *Review of Educational Research*, 91(4), 577–613.
- \*Fan, H., Xu, J., Cai, Z., He, J., & Fan, X. (2017). Homework and students' achievement in math and science: A 30-year meta-analysis, 1986–2015. *Educational Research Review*, 20, 35-54.
- \*Freeman, J., Wilkinson, S., Kowitt, J., Kittelman, A., & Brigid Flannery, K. (2018). Research-Supported Practices for Improving Attendance in High Schools: A Review of the Literature. *Educational Research and Evaluation*, 24(8), 481–503.
- French, G., Farrell, T., McCormack, M., Nic Mhuirí, S. & Shiel, C. (2022). *Enabling community engagement to support literacy, digital literacy and development and literacy for all children*. Dublin: Department of Education.
- \*Galindo, C., & Sheldon, S. B. (2012). School and home connections and children's kindergarten achievement gains: The mediating role of family involvement. *Early Childhood Research Quarterly*, 27(1), 90–103.  
<https://doi.org/10.1016/j.ecresq.2011.05.004>
- \*Goforth, K., Noltemeyer, A., Patton, J., Bush, K. R., & Bergen, D. (2014). Understanding mathematics achievement: An analysis of the effects of student and family factors. *Educational Studies*, 40(2), 196–214. <https://doi.org/10.1080/03055698.2013.866890>
- Goodall, J. (2021). Parental engagement and deficit discourses: Absolving the system and solving parents. *Educational Review*, 73(1), 98-110.
- Goodall, J., & Montgomery, C. (2014). Parental involvement to parental engagement: A continuum. *Educational review*, 66(4), 399-410.
- Government of Ireland, (1999). *Primary School Curriculum:Introduction*. Dublin, The Stationery Office.
- Government of Ireland, (1937). *Bunreacht na hÉireann (Irish Constitution)*. Dublin: Oifig an tSoláthair/Government Publications.
- \*Hands, C. (2013). Including all families in education: School district-level efforts to promote parent engagement in Ontario, Canada. *Teaching Education*, 24(2), 134–149.  
<https://doi.org/10.1080/10476210.2013.786893>
- \*Higgins, S., & Katsipataki, M. (2015). Evidence from meta-analysis about parental involvement in education which supports their children's learning. *Journal of Children's Services*, 10(3), 280–290. Scopus. <https://doi.org/10.1108/JCS-02-2015-0009>
- \*Jeynes, W. (2012). A Meta-Analysis of the Efficacy of Different Types of Parental Involvement Programs for Urban Students. *Urban Education*, 47(4), 706–742. Scopus.  
<https://doi.org/10.1177/0042085912445643>

- \*Jeynes, W. H. (2018). A practical model for school leaders to encourage parental involvement and parental engagement. *School Leadership & Management*, 38(2), 147–163.
- Kumpulainen, K., & Gillen, J. (2017). Young children’s digital literacy practices in the home: A review of the literature. COST ACTION ISI1410 DigiLitEY. ISBN: 9780902831469 Accessed: <http://digilitey.eu>
- \*Ma, X., Shen, J., Krenn, H., Hu, S., & Yuan, J. (2016). A Meta-Analysis of the Relationship Between Learning Outcomes and Parental Involvement During Early Childhood Education and Early Elementary Education. *Educational Psychology Review*, 28(4), 771–801.
- \*McCormick, M. P., Cappella, E., O’Connor, E. E., Hill, J., McClowry, S. G. (2016). Does intervention for parents add value to social-emotional learning programs? Evidence from the randomized trial of INSIGHTS. *Journal of Research on Educational Effectiveness*, 9(3), 364–394.
- Milner-Bolotin, M., & Marotto, C. C. F. (2018). Parental engagement in children’s STEM education. Part I: Meta-analysis of the literature. *LUMAT*, 6(1), 41–59. Scopus. <https://doi.org/10.31129/LUMAT.6.1.292>
- National Council for Curriculum and Assessment (NCCA). (2009). *Aistear: The early childhood curriculum framework*. Dublin: NCCA.
- \*Park, S., & Holloway, S. D. (2013). No Parent Left Behind: Predicting Parental Involvement in Adolescents’ Education Within a Sociodemographically Diverse Population. *The Journal of Educational Research*, 106(2), 105–119. <https://doi.org/10.1080/00220671.2012.667012>
- \*Petridou, A., & Karagiorgi, Y. (2018). Parental Involvement and Risk for School Failure. *Journal of Education for Students Placed at Risk (JESPAR)*, 23(4), 359–380. <https://doi.org/10.1080/10824669.2018.1523733>
- \*Powell, D. R., Son, S. H., File, N., & Froiland, J. M. (2012). Changes in parent involvement across the transition from public school prekindergarten to first grade and children's academic outcomes. *The Elementary School Journal*, 113(2), 276-300.
- Pushor, D., & Ruitenberg, C., with co-researchers from Princess Alexandra Community School. (2005, November). *Parent engagement and leadership* ( Research report, Project #134). Saskatoon, Canada: Dr. Stirling McDowell Foundation for Research into Teaching.
- Raikes, H., Pan, B. A., Luze, G., Tamis-LeMonda, C. S., Brooks-Gunn, J., Constantine, J., Tarullo, L. B., Raikes, H. A., & Rodriguez, E. T. (2006). Mother-child book reading in low-income families: Correlates and outcomes during the first three years of life. *Child Development*, 77(4), 924–953. <https://doi.org/10.1111/j.1467-8624.2006.00911.x>
- Seitsinger, A. M., Felner, R. D., Brand, S., & Burns, A. (2008). A large-scale examination of the nature and efficacy of teachers' practices to engage parents: Assessment, parental contact, and student-level impact. *Journal of School Psychology*, 46(4), 477–505. <https://doi.org/10.1016/j.jsp.2007.11.001>
- Seitsinger, A. M., & Brand, S. (2012). The school family context for adolescent development during high school. In T. Patelis (Ed.), *Research studies, literature reviews and perspectives in psychological science* (pp. 49-56). Athens, Greece: Athens Institute for Education and Research.

- Seitsinger, A. M. (2019). Examining the effect of family engagement on middle and high school students' academic achievement and adjustment. In Sheldon S. B., & Turner-Vorbeck, T. A. (Eds.), *The Wiley handbook of family, school and community* (pp. 265-293). John Wiley & Sons.
- Sheldon, S. B., & Turner-Vorbeck, T. A. (Eds.). (2019). *The Wiley handbook of family, school, and community relationships in education*. John Wiley & Sons.
- \*Smith, T. E., Reinke, W. M., Herman, K. C., & Sebastian, J. (2021). Exploring the link between principal leadership and family engagement across elementary and middle school. *Journal of School Psychology, 84*, 49-62.
- \*Smith, T. E., & Sheridan, S. M. (2019). The Effects of Teacher Training on Teachers' Family-Engagement Practices, Attitudes, and Knowledge: A Meta-analysis. *Journal of Educational & Psychological Consultation, 29*(2), 128-157. ehh.
- \*Smith, T. E., Sheridan, S. M., Kim, E. M., Park, S., & Beretvas, S. N. (2020). The Effects of Family-School Partnership Interventions on Academic and Social-Emotional Functioning: A Meta-Analysis Exploring What Works for Whom. *Educational Psychology Review, 32*(2), 511-544. Scopus. <https://doi.org/10.1007/s10648-019-09509-w>
- \*Tan, C. Y., Lyu, M., & Peng, B. (2020). Academic Benefits from Parental Involvement are Stratified by Parental Socioeconomic Status: A Meta-analysis. *Parenting, 20*(4), 241-287. <https://doi.org/10.1080/15295192.2019.1694836>
- \*Tan, C. Y., Peng, B., & Lyu, M. (2019). What types of cultural capital benefit students' academic achievement at different educational stages? Interrogating the meta-analytic evidence. *Educational Research Review, 28*, 100289.
- \*Van Steensel, R., McElvany, N., Kurvers, J., & Herppich, S. (2011). How Effective Are Family Literacy Programs? Results of a Meta-Analysis. *Review of Educational Research, 81*(1), 69-96.
- \*Van Voorhis, F. L., Maier, M. F., Epstein, J. L., & Lloyd, C. M. (2013a,b). *The Impact of Family Involvement on the Education of Children Ages 3 to 8: A Focus on Literacy and Math Achievement Outcomes and Social-Emotional Skills*. MDRC. <https://eric.ed.gov/?id=ED545474>
- Vukovic, R. K., Roberts, S. O., & Wright, L. G. (2013). From Parental Involvement to Children's Mathematical Performance: The Role of Mathematics Anxiety. *Early Education and Development, 24*(4), 446-467. <https://doi.org/10.1080/10409289.2012.693430>
- \*Wilder, S. (2014). Effects of parental involvement on academic achievement: a meta-synthesis. *Educational Review, 66*(3), 377-397.

### Author Biographies

**Dr Thérèse Farrell** is an Assistant Professor in Early Childhood Education at the Institute of Education, Dublin City University. She lectures on a range of undergraduate, postgraduate and in-service programmes, in numeracy and literacy, including digital literacies. Thérèse worked for many years as an infant teacher in a primary school and as a tutor for Aistear, The Early Childhood Curriculum Framework (NCCA, 2009). Thérèse's doctoral research was a theoretical genealogy of early years pedagogy using a Foucauldian lens. This research systemically traced the development of early years pedagogy from the eighteenth century to present times.

**Dr Geraldine French** is an Associate Professor, Head of School of Language, Literacy and Early Childhood Education (ECE), Programme Chair of the Master of Education in ECE at the Institute of Education, DCU and Senior Fellow of Advance HE (SFHEA). Geraldine was commissioned to undertake reviews of literature on the key elements of professional practice in relation to children under three years by the National Council for Curriculum and Assessment and reviews underpinning both national frameworks Aistear and Síolta in ECE. She has published extensively in the areas of quality professional practice in ECE, early literacy, numeracy, speech, language and more recently relational pedagogy with babies.

**Marlene McCormack** is an Assistant Professor and Programme Chair of the Bachelor of Early Childhood Education Programme in the School of Language, Literacy and ECE at the Institute of Education, DCU. She teaches at undergraduate and postgraduate level in the areas of practice and play, incorporating a focus on language, literacy, numeracy and inquiry and mentoring. Marlene has worked closely with Penn Literacy Network based in The University of Pennsylvania's Graduate School of Education (Penn GSE), over many years, developing and delivering literacy courses to early childhood educators. Her doctoral work is focusing on the area of pedagogical documentation. Other current areas of research include play in the lives of young children experiencing stress and professional practice (placement).

**Dr Siún Nic Mhuirí** is an Assistant Professor in Mathematics Education, in the School of STEM Education, Innovation and Global Studies, Institute of Education, DCU. She teaches at undergraduate and postgraduate levels. Siún has been involved in research evaluations which support policy developments as both contributing author and principal investigator. She has conducted research in the area of teaching and learning of mathematics in early childhood and primary education, of specific mathematical strands in upper primary school and on the Maths4All project. Currently, she is working on a NCCA commission to develop support materials for the forthcoming primary mathematics curriculum. Siún is also an active member of CASTeL, and co-leader of a thematic working group (TWG) of the European Society for Research in Mathematics Education.

**Caoimhe Shiel**, BEd, MEd Lit, is a teacher at primary level in a DEIS school, where she currently teaches infant classes. She is especially interested in young children's writing development and in fostering parental involvement in literacy. She continues to contribute to the Write to Read project, which she works as an associate. Her role involves advising other disadvantaged schools on approaches to effective literacy development. Caoimhe was a finalist in the Literacy Association of Ireland Outstanding Thesis Award in 2020. She has facilitated tutorials in literacy for undergraduate students since 2019.



## Appendix Research Strategy and Tabulation of Results

### *Overview of Studies*

In total, 28 studies were included in this review. These included 12 meta-analyses. Seven large-scale or randomised control studies were included, including two studies with a nationally (USA) representative sample (Galindo & Sheldon, 2012; Park & Holloway, 2015). One piece of grey literature, split into two studies examining the impact of family involvement on literacy and mathematics outcomes respectively, was also included (Van Voorhis et al., 2013a and b). Seven systematic literature reviews or small-scale empirical studies were also included as they gave insight into important topics not covered by meta-analytic literature, e.g., involvement of immigrant parents. In line with the bibliometric analysis on parental involvement literature conducted by Addi-Raccah et al. (2021), the included studies have diverse psychological and sociological perspectives, but are largely situated in urban- and US-contexts. Teacher-parent communication around formative and summative assessment results is to be an important part of Irish educational policy (c.f., DES, 2011; 2015) but no studies were included which address this topic. While it is recognised that family engagement plays an important role for second-level students (Park & Holloway, 2013), and also has the potential to support digital literacy (Kumpulainen & Gillen, 2017), few studies were found which addressed these topics. In addition, while technology can serve as means to facilitate two-way communication between settings and families, little high-quality research examining this topic was identified. For further detail of reviewed studies, see Table 1. Figure 2 shows a prisma chart documenting the search process. Two handbooks published since 2011 were also consulted (Epstein et al., 2018; Sheldon & Turner-Vorbeck, 2019).

### *Research Questions*

1. What aspects of family engagement support the development of children's literacy, digital literacy and numeracy?
2. What is the nature of successful family engagement programmes or initiatives that support children's literacy, numeracy and digital literacy?

### *Key Search Terms*

"Parent\* Participation" OR "Parent\* Involvement" OR "Parent\* engagement" OR "Parent-School Relationship" OR "Parent School Relationship OR "Parent-teacher relationships" OR "Family Participation" Or "Family Involvement" OR "Family Engagement" OR "Family-School Relationship" OR "Family School Relationship"

AND "Education\* programme" OR "education\* program" OR "Education\* initiative" OR "Education\* intervention" or "Education\* partnership" OR "school programme" OR "school program" OR "school initiative" OR "school intervention" or "school partnership"

AND ("meta-analysis" OR "systematic review")

### ***Key Data Sources Consulted***

Three databases were searched

(a) EBSCO Education Research Complete

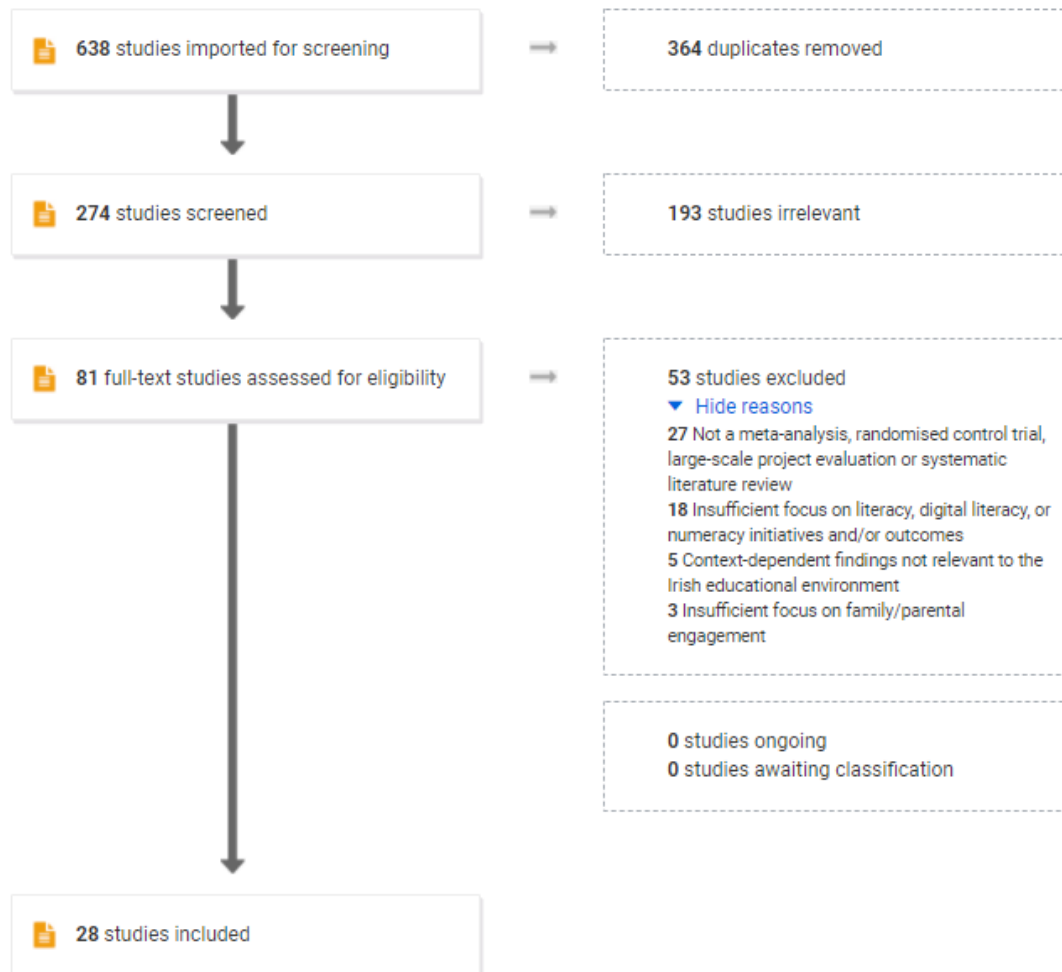
(b) EBSCO ERIC

(c) Scopus.

‘Grey’ literature was identified through hand searches.

### ***Exclusion Criteria***

- Pre-2011, non peer-reviewed, non-English language.
- Not a meta-analysis, randomised control trial, large-scale project evaluation or systematic literature review.
- Insufficient focus on literacy, digital literacy, or numeracy initiatives and/or outcomes.
- Context-dependent findings not relevant to the Irish educational environment.
- Insufficient focus on parental engagement.



**Figure 1.** Prisma chart documenting search process

**Table 1. Overview of findings**

<b>Review</b>	<b>Nature of research/Age range</b>	<b>Effect size (If available)</b>	<b>Finding</b>
Anderson, Anderson & Sadiq (2017)	Literature review including three meta-analyses. Early Years.	Not reported	Family literacy programmes have a positive effect on young children's language and learning development and studies of bilingual family literacy programmes indicate that they are effective in significantly increasing children's early literacy knowledge in the dominant or mainstream language and in promoting home language maintenance.
Anthony-Newman (2019)	Meta-synthesis of 40 qualitative and quantitative studies. Elementary to high school.	Not reported	Immigrant parents are not a homogenous group and differ in terms of race, ethnic identity, educational level and language abilities. Language barriers sometimes impede home-school communications and hamper school-based engagement. Teachers sometimes underestimate home-based engagement practice and potential for school-based engagement. Differences in understanding of parental role in education.
Barger, Kim, Kuncel & Pomerantz (2019).	Synthesis of 448 studies. Early childhood to second level students.	Range 0.13 to 0.23	Over time, parental involvement in a student's education (including parents' participation in school events and discussion of school with children) has a small to moderate positive association with academic adjustment (including achievement, motivation and engagement).
Bierman, McDoniel & Loughlin-Presnal (2019)	200 Head Start children (mean age of 4.45 years old)	$\beta = 0.23, p = .001.$ (Effect on academic performance in third grade)	Longitudinal associations between initial effects of the REDI (Research-based Developmentally Informed) Parent program and later benefits. Kindergarten gains across parenting and child skills. Four years later, these initial gains were sustained in terms of academic achievement and social-emotional competence across home and school contexts.

de Bondt, Willenberg, Bus (2020)	Meta-analysis of 44 studies. Infancy/early years.	Home literacy environment (d = 0.31, 95% CI [0.23, 0.38], k = 30), Interest/higher levels of literacy before/after ECE (d = 0.29, 95% CI [0.23, 0.35], k = 23)	Meta- analysis of studies relating to 3 free book giveaway programs for infants- Bookstart, Reach Out and Read and Imagination Library. Parents were encouraged to read to children from early infancy. This focuses on shared reading as part of the home literacy environment. Findings indicate that book giveaway programs promote children’s home literacy environment. As a result, increased interest in reading and children scoring higher on measures of literacy-related skills prior to and during the early years of school were recorded.
Erdem & Kaya (2020)	Meta-analysis of 55 independent studies total participants is 106,221. (All ages)	ES = r = .09 (LL = .07, UP = .11; k = 256).	A positive relationship between parental involvement and academic achievement. Parental involvement should be promoted by educational policies and practices. Parental involvement has more effect on academic achievement in developing countries as opposed to developed countries.
Fan, Xu, Cai, He, & Fan (2017)	Meta-analysis of 28 studies. Primary, middle and high school students.	Study-effects meta-analysis (no. of effects = 41) ES= 0.225, 95% CI [0.190, 0.260]	Positive, weak relationship between homework and performance in mathematics and science. Effect size varied by geographical region. The relationship was stronger for primary and high school students, and weakest for middle school students. Larger effect sizes were associated with “homework completion,” “homework grade,” and “homework effort” rather than “homework frequency” and “time spent on homework”
Fikrat-Wever, van Steensel & Arends (2021).	Meta-analysis of 48 studies covering 42 different family literacy programmes. Children aged from 0 - 6 years old.	Cohen’s d =0.50 on immediate posttests and a marginal average effect of Cohen’s d = 0.16 on follow-up measures	In a low SES setting, family literacy programmes that target a limited set of skills in a single training setting were found to be most effective. Researchers provide guidelines for programme developers and call for further research on how short term gains can be sustained over time. Notably, larger effects were found in experimental studies, as well as when researcher designed assessments were used.

Freeman, et al. (2018)	17 studies. High-school students	Not reported	Results indicate that the three 3 most common elements of high-school attendance interventions with desired outcomes were skills training, family support, and incentive-based strategies.
Galindo & Sheldon (2011)	Nationally representative sample of US kindergartners	ES for family involvement in reading (.05) and math gains (.04).	Schools' efforts to communicate with and engage families predicted greater family involvement in school and higher levels of student achievement in reading and math at the end of kindergarten. On average, family involvement at school and parents' educational expectations were associated with gains in reading and math achievement in kindergarten.
Goforth et al. (2014)	747 low SES children. Kindergarten to Grade 8.	Not reported	Reading achievement was the most significant predictor of mathematics achievement. Parental pessimism was also a significant predictor of mathematics performance on calculation and applied problem assessments.
Hands (2013)	Investigative synthesis of five district-level parent engagement projects.	Not reported	To promote agency among parents and school personnel regarding home-school collaboration, issues such as culture need to be considered. To address high student achievement and reduce achievement gaps, it is essential to engage all families in their children's education.
Higgins & Katsipataki (2015)	Synthesis of 13 meta-analyses. Early years to 12th grade.	Not reported	Impact from general approaches of parental involvement (an average additional gain of three to six months for children's educational outcomes) and for targeted interventions (averaging four to six months). There is a wider range of estimates for family literacy (two to eight months average gain).
Jeynes (2012)	51 studies (c.13,000 participants). Pre-kindergarten-12th-grade.	.30 ( $p < .01$ ) [1.91 - -.21]	Significant relationship between involvement programmes and academic achievement for all age groups. Programmes found to have significant effects are listed below in descending order of effect size, with the final two programme-types found to have a positive relationship that is not statistically significant: Shared reading; Emphasized partnership; Communication between parents and teachers; Checking homework; Head Start; ESL teaching.

Jeynes (2018)	6 meta-analyses, (203 studies, more than 350,000 participants). Pre-kindergarten-college freshman.	Effect size for each of the ten components in the range [.08 - .75]	The Dual Navigation Approach model identifies 10 key components of family engagement split across family-based (high expectations, supportive and informative communication, parental style, reading with children, household rules) and school-based components (partnership with teacher, communication between teacher and school, check homework, parent participation and attendance, drawing from community resources).
Ma, Shen, Krenn, Hu & Yuan (2015)	Meta-analysis of 46 studies. Early years and early elementary (up to grade 3)	A strong/ positive correlation (.509) between learning outcomes and parental involvement	Parent involvement is more important than the role of schools and communities (partnership development). Effective family involvement includes behavioural involvement, home supervision, and home-school connection. From a school-partnership perspective, capacity to engage parents, respectful and effective leadership in relation to families and children, and institutionalized authentic partnerships were found to be particularly beneficial.
McCormick, et al. (2016)	435 parent/child dyads. Kindergarten and First grade.	p (t(433) D 3.12, p < .01).	Children at lower risk for poor achievement had parents who were more likely to participate in program services.
Park & Holloway (2013).	3,248 parents drawn from the 2007 National Household Educational Survey. Second level students	Not reported	Examining the Hoover-Dempsey and Sandler (HDS) model for predicting parents involvement in students' education at second level and in diverse family contexts, researchers found that the HDS model was effective, and that school outreach efforts, as well as supporting parents' self-efficacy is important for home engagement with education.
Petridou and Karagiorgi (2018)	6865 Year 6 students from 226 public primary schools	Not reported	Positive associations between parent-child interactions in relation to school activities and students' achievement. One of the strongest predictors of achievement.

Powell, Son, File and Mark (2012)	90 children and their parents or primary caregivers. Prekindergarten classrooms	$d = .30$	Three-year study. Assessed children's literacy, language and mathematics skills prior to kindergarten and again at the end of first grade across four dimensions of parental involvement; school; cognitive stimulation at home; learning resources at home and out of school experiences Increases in home learning resources from pre-kindergarten to kindergarten positively correlated with higher first-grade mathematics outcomes of children with lower pre-kindergarten-entry mathematics skills
Smith & Sheridan (2019)	39 studies of pre-service and in-service teacher	0.635 ( $p < .05$ )	Teacher-training programmes had a significant positive effect on teacher family-engagement outcomes, i.e., teacher family-engagement attitudes, knowledge, and practices. The key components of successful programmes were: collaborative planning and problem solving, communication strategies, cultural awareness/working with diverse populations, family-engagement attitudes/beliefs, and parent-teacher relationships.
Smith, Reinke, Herman, & Sebastian (2021)	2 randomized control trials (3208 students, 207 teachers of elementary and middle schools)	0.28 (Cohen's $f^2$ moderate effect)	A significant positive relationship was revealed between principal collegial leadership and family engagement. Remained significant when controlled for student characteristics (gender, free or reduced lunch, race, special education status, level of disruptive behaviour)
Smith, Sheridan, Kim, Park & Beretvas (2020)	77 studies, Preschool to Grade 12.	academic achievement ( $\delta = .25$ )	Family School Partnership interventions had a significant positive effect on children's academic and social-emotional functioning. The key relational and structural components of successful programmes were home based involvement, school to home communication, bi-directional communication and collaboration. Some effects were moderated by age.



Tan, Lyu & Peng (2020)	A meta-analysis of 98 studies. K-12 students	Mean effect size was .14, with a 95% CI (.11, .16). Significantly different from zero, $p < .01$ .	Six specific aspects of parental involvement, namely parental academic expectations, parental support for child learning, parent-child discussion of school matters, parental participation in school governance and events, parent and child reading together, and parental emphasis on education, positively associated with student achievement. Some benefits of parental involvement are stratified by familial socioeconomic status.
Tan, Peng & Lyu (2019)	A meta-analysis of 105 studies. K-12 students	Overall measure of cultural capital, mean effect size 0.37 $p < .01$ . (CI 0.30, 0.43)	Nine specific cultural capital variables benefited all students (home educational resources, maternal and paternal education, parental expectations, cultural participation, home support, school participation) but a differentiated pattern was identified depending on age/educational stage. Kindergartners benefited most from parental education, parental academic emphasis, and parent-child reading while older children (grades 7 - 12) benefited most from academic discussions. Children in grades 1-6 benefited less from parental school involvement than kindergarten and older children (grades 7 -12).
van Steensel, McElvany, Kurvers & Herppich (2011)	30 studies. Preschoolers, kindergarteners, and/or primary school children	Mean effect (A =0.18). Minor difference between comprehension- and code-related effect measures (A = 0.22 vs. d = 0.17)	Programmes found to offer a broad range of activities, reflecting a move away from 'reading readiness' to more holistic emergent literacy approach. Programmes focused on developing comprehension emphasise activities such as shared reading. Overall family literacy interventions appear make a modest contribution to children's literacy skills.
Van Voorhis, Maier, Epstein, & Lloyd (2013a) Literacy focus	52 studies, including 8 meta-analyses,	Range 0.18 - 0.65 (only meta-analyses)	Positive effect of reading interventions and home literacy activities.

Van Voorhis, Maier, Epstein, & Lloyd (2013b) Mathematics	43 studies including 2 meta-analyses, Age 3-8.	Not reported	Positive associations between home-based mathematics activities and mathematics achievement. Targeted workshops that over several weeks that actively involved parents in conducting specific mathematics activities found to be effective. Well-designed interactive homework activities that guide parents' interactions with students found to increase children's scores.
Wilder (2014)	9 meta-analyses. All age-ranges.	Not reported	The relationship between parental involvement and academic achievement was positive, regardless of definitions or measures used. This relationship holds across school class levels and race but the impact was stronger for some ethnic groups. Strongest effect where parental involvement was defined as parental expectations for academic achievement. No positive relationship between homework assistance and academic achievement. Conflicting results on how subject area (e.g., literacy or mathematics) affects the relationship. Mixed results also in relation to how home supervision affects the relationship