

Centre for Community  
Child Health



# Tasmanian Play2Learn+ Trial: Evidence Review

Prepared for the Department of Social Services

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## Tasmanian Play2Learn+ Trial: Evidence Review

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*The Centre for Community Child Health acknowledges the Traditional Owners of the land on which we work and pay our respect to Elders past, present and emerging.*



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## Acronyms

Abbreviation/acronym	Definition
ABS	Australian Bureau of Statistics
AEDC	Australian Early Development Census
ARACY	Australian Research Alliance for Children and Youth
ASQ	The Ages and Stages Questionnaire
CCCH	Centre for Community Child Health
CHaPS	Child Health and Parenting Services
DOTE	Dropping Off the Edge
DSS	Department of Social Services
EYLF	Early Years Learning Framework
ECE	Early childhood education
ECEC	Early childhood education and care
GDP	Gross Domestic Product
KDC	Kindergarten Development Check
LIFT	Learning in Families Together
LiL	Launching into Learning
NAPLAN	National Assessment Program Literacy and Numeracy
PBO	Payment by Outcome
PICCOLO	Parenting Interactions with Children: Checklist of Observations Linked to Outcomes
QALY	Quality Adjusted Life Year
SEIFA	Socio-Economic Indexes for Areas
SII	Social Impact Investing



## Executive summary

To test the feasibility and efficacy of a Social Impact Investing model for funding human services, the Department of Social Services (DSS) has established three Payment by Outcome Trials in which DSS is partnering with service providers to design, implement and evaluate outcome-based funding agreements. One of these trials was codesigned with 54 reasons and involves delivering the Play2Learn+ program for children and families in Tasmania. This program targets children 3 to 4 years old from low socioeconomic backgrounds twelve months prior to kindergarten commencement. The overall aims of the intervention are to build the capacity and confidence of caregivers to support their children's learning and development, and to help families ensure that children attend Tasmania's 3 and 4-year-old preschool programs.

The Centre for Community Child Health (CCCH) was commissioned by the Department of Social Services to provide an overview of existing evidence relating to the long-term impacts of school readiness on health and wellbeing outcomes, as well as potential savings in avoided costs and revenue at the federal and state levels of government.

The report begins with a review of how children (and families) develop and learn, and the key factors affecting child development and family functioning. This overview is needed in order to understand the role that early childhood services can play in shaping school readiness and later development, as well as the limitations of that role.

The next three sections address the key questions posed by DSS, beginning with the evidence regarding school readiness – what it is, how it relates to future academic achievement and employment, and the factors that shape it. This is followed by an analysis of the theory of change underpinning the Play2Learn+ intervention, including a consideration of the limits of what this program can achieve. In the third of these key sections, the evidence regarding the cost benefits to government is reviewed – what economic benefits can be expected, what future costs will be avoided, and what is the cost of not investing in early childhood programs. The final section of the report summarises the key findings and draws key conclusions.

### Child development

This report began with an overview of the evidence regarding child development that highlighted two key points. The first is the importance of the very earliest stages of development, from conception to the end of the second year. What happens during this period can have life-long consequences. All of this occurs well before the Play2Learn+ program commences, and raises questions about what forms of support should be provided to families during these crucial early years, and how the Play2Learn+ program links with and builds on these early supports.

The second point is that child and family functioning are shaped by the conditions in which the families are living – their social and physical environments and their access to material basics. These conditions have a major influence on the capacity of the family to provide their children with appropriate nurturing care as well as safe and stimulating home learning environments. These conditions can have a greater impact on child and family outcomes than do the services they receive. There are large socioeconomic variations in the conditions under which families are living, contributing to the socioeconomically-graded outcomes observable in children and families. Services will always struggle to overcome these variable outcomes as long as the underlying factors that produce them are not addressed as well.



## School readiness

The next section reviewed the evidence regarding school readiness. It was noted that school readiness is not solely a matter of working directly with the child to ensure they are 'ready', but also involves ensuring that the school is ready for the child (understands the child's needs and has programs to address these), and that the family and the community are able to provide the child with the experiences and learning opportunities during the preschool years that will ensure that children arrive at school ready and able to take advantage of the social and learning opportunities that schools provide. This is important because school readiness is predictive of later school academic achievement. However, it does not determine future achievements; much depends upon the ongoing quality of schooling, especially in the early primary school years.

There is strong evidence that early childhood education (ECE) programs can improve school readiness and contribute to subsequent educational achievements, provided they are of high quality. These benefits are long-lasting and wide-ranging, and accrue to the individuals themselves, as well as the wider society and government. Two years of high-quality preschool provides greater benefits than one, and starting earlier yields higher benefits. Children from disadvantaged backgrounds benefit most from attending high quality ECE programs, but gain nothing and may even be harmed by attending low quality programs. These children also benefit from attending schools with a range of other children rather than only other disadvantaged children.

Families differ in their ability to provide children with all the experiences and learning opportunities they need in the early years, which contributes to different levels of school readiness at school entry. Variations in school readiness show a clear socioeconomic gradient: the more disadvantaged children's backgrounds, the more likely they are to show developmental vulnerabilities on the Australian Early Development Census (AEDC) (which is collected in children's first year at school). This partly reflects the fact that children from disadvantaged backgrounds are less likely to access ECE programs and are also less likely to have access to ECE programs of high quality. Successfully engaging families who are facing multiple challenges or are marginalised is critical for improving outcomes for them and their children.

## Play2Learn+ theory of change

The next section analysed the theory of change underpinning the Play2Learn+ program. The review found that there is good evidence for the key elements of the Play2Learn+ program's theory of change – assertive outreach, supported playgroups, preschool attendance, engaging with parents, and the use of coaching and developmental monitoring. Providing these are all delivered in ways that are consistent with best practice and are of high quality, then it is likely that the intervention will succeed in achieving its aims and that there will be positive benefits for the children and families involved. However, it is not enough to assume that the various services will be delivered as intended: there needs to be ways of monitoring all these key program elements to ensure that they are delivered in ways that are acceptable to parents and that build parental capabilities. There also needs to be support and relevant training for staff who are working directly with the children and families.

The extent to which the program can fully achieve its intended outcomes is limited by two key factors. One is that child outcomes are strongly shaped by the social and material conditions under which families are raising their children, and the Play2Learn+ program does not directly address these conditions. While Play2Learn+ can arrange referrals to other services that can help parents address the challenges they face, there is no guarantee that these services will be available in a timely fashion, or that they will be able to help the family resolve or manage the issues satisfactorily. The ideal would be for Play2Learn+ to be part of an integrated service network providing holistic support to families.

The second limitation concerns the age at which the intervention starts. There is a strong case for starting earlier than 3 years to provide support for early parenting and family functioning. The challenge of finding and engaging with parents for the Play2Learn+ intervention would be much easier if the parents had been involved in appropriate parent support programs since before the children were born. And the gap between their children and those from more well-resourced families would be less if the children had been involved in high-quality childcare services before they reached 3 years of age.



## Cost benefits of investments in early years services

The final section reviewed the evidence regarding the cost benefits of investments in early years services. Drawing definitive conclusions from the many cost-benefit analyses that have been conducted is difficult. This is partly because of the different contexts in which they have been conducted, the different populations involved, and the different methods of calculating costs used. While there are some inconsistencies in the findings, the majority of studies find that high quality universal preschool education programs yield economic benefits beyond the cost of the programs themselves. Efforts to improve the sensitivity of early parenting can also have long-term cost savings. These benefits are experienced both by individuals as well as by governments.

The economic benefits for governments take different forms, including increased government revenue as well as decreased government expenditure. After the initial period in which costs outweigh the economic benefits, the benefits begin to outweigh the costs and accrue indefinitely. In general, the economic returns of investments in the early years are higher than those in later years, and are greater for children from disadvantaged backgrounds.



# 1. INTRODUCTION

## 1.1 DSS Payment by Outcomes trials

Social Impact Investing (SII) is a term used to describe investments that are primarily made to generate substantial social impact, while delivering financial return on the investment. This model differs from traditional investments in that it has an active social and/or environmental objective in addition to a financial return objective. It operates by bringing together government, service providers, community stakeholders, and private sector capital to foster a greater focus on outcomes and deliver a consistent approach to quality improvement and evidenced-based decision making.

To test the feasibility and efficacy of this financial model, the Australian Government has established three Payment by Outcome (PBO) Trials where Government has partnered with service providers to design, implement and evaluate outcome-based funding agreements. Under this agreement, a proportion of the payments to the service provider is dependent on its achievement of measurable outcomes, including benefits accruing to the Commonwealth, from effective interventions supporting people experiencing vulnerability and/or disadvantage.

## 1.2 Play2Learn+ Trial – CCCH commission

Growing evidence suggests that engagement with quality early childhood education and care (ECEC) programs such as preschool can improve children's early development. By providing cognitively stimulating and rich learning environments, ECEC provides a significant opportunity to promote children's healthy development, and therefore support successful transitions to the school environment.

The Australian government recognises the value of investing in the early years. As such, in March 2021, the Department of Social Services (DSS) entered a PBO Trial (PBO Trial 2), codesigned with 54 reasons, to deliver the Play2Learn+ program for children and families in Tasmania. DSS aims to test whether using a PBO model in which payments are tied to outcomes delivered, rather than services rendered by the provider, can deliver better outcomes. While the intended outcomes of this program pertain to improving school readiness and school participation among vulnerable and disadvantaged families with children aged 3- 4 years, DSS is interested in evidence of the financial benefits to the Commonwealth, including: 1) anticipated long-term gain of avoided future costs (as a result of school readiness and improved school participation); and 2) increased revenue for the Commonwealth as a result of improved lifelong outcomes for children who have greater school readiness and increased school participation.





## 2. TASMANIAN CONTEXT

Of all Australian states and territories, Tasmania has the highest proportion of people living in the most disadvantaged areas (32.8%), with over two-thirds of Tasmania's children residing in areas of relative disadvantage (Commissioner for Children and Young People, 2018). The target cohort for this study is children and families experiencing social disadvantage who are disengaged from early childhood education services, with a child due to enter kindergarten in the following year. The program is being delivered in 14 locations in the Greater Hobart and Southern Regions areas: Rokeby, Clarendon Vale, Sorell, Risdon Vale, Lindisfarne North, Moonah, Austins Ferry, Glenorchy, Dodges Ferry, Warrane, Goodwood, Margate, Snug, and Huonville. As indicated by the Australian Bureau of Statistics (ABS) SEIFA<sup>1</sup> rankings, the majority of these areas are socio-economically disadvantaged, with six of them being among the ten most disadvantaged communities in Tasmania. According to the Jesuit Social Services *Dropping Off the Edge* report (2021)<sup>2</sup>, these communities experience a complex web of disadvantage that make it challenging to improve life opportunities. The most common forms of disadvantage are low income, family violence, prison admissions and no internet at home.

Tasmania's efforts to support better outcomes for all children and young people are guided by Tasmania's *Child and Youth Wellbeing Strategy* (2021). This comprehensive, long-term, whole of government plan was informed by the Commissioner for Children and Young People's report, *Investing in the Wellbeing of Tasmania's Children and Young People* (2020). This report recommended that the Tasmanian Government develop and implement a whole-of-government strategy to improve the wellbeing of Tasmanian children and young people, with a focus on the first 1,000 days (pregnancy to 2 years of age), and a structure based around the six domains of wellbeing identified in the existing *Tasmanian Child and Youth Wellbeing Framework* (2018).

Tasmania's ECEC services are delivered by a mix of for-profit, not-for-profit and local government providers; however, the sector is dominated by not-for-profit providers in metropolitan areas where there is a wealthier population. While over half of all Tasmanian children aged under four participate in formal childcare, children from disadvantaged areas do not attend ECEC in the same numbers as children from other areas (Arefadib & Moore, 2018). A recent study of Tasmanian children's use of universal early childhood health and education services (Taylor et al., 2022) found that children of families who made regular use of such services were less likely to be developmentally vulnerable in one or more AEDC domains in their first year of school.<sup>3</sup> Children of families who made low or declining use of health and ECEC services were more likely to be exposed to cumulative family risks, and also more likely to be rated as developmentally vulnerable when they reached school.

In addition, the Tasmanian government has invested in a range of initiatives to support better outcomes for young children, particularly those experiencing vulnerability. These include:

- **Child and Family Learning Centres (CFLCs)**  
Provided by the Department of Education, these Centres work with and support families with children aged 0-5 years in order to improve educational, health and wellbeing outcomes for children, by reducing barriers and increasing access to services and preparing children for transition to school.
- **Launching into Learning (LiL)**  
Provided by the Department of Education, this is a free program for children from birth to 4 years available in all Tasmanian schools and Child and Family Learning Centres, providing creative play opportunities to support a child's learning and assist in their transition to school.

1 Socio-Economic Indexes for Areas (SEIFA) is a product developed by the ABS that ranks areas in Australia according to relative socio-economic advantage and disadvantage

2 <https://www.dote.org.au/>

3 The five AEDC domains are physical health and well being; social competence; emotional maturity; language and cognitive skills (school-based); and communication skills and general knowledge. See <https://www.aedc.gov.au/about-the-aedc>



- **Learning in Families Together (LIFT)**  
Also provided by the Department of Education, this program builds on the Launching into Learning program and provides caregivers of children in K-2 with opportunities to be actively involved in their child's learning
- **Working Together Supporting Early Learning for additional needs**  
Eligible child can take part in up to 400 hours of free early learning at a childcare service in the year before they start kindergarten, the program also provides extra support for either the child, or family as needed.
- **Child Health and Parenting Service (CHaPS)**  
Provided by the Department of Health, this program provides health, development and well-being assessment for children; parenting information, advice and support for caregivers; perinatal mental health screening and well-being support for caregivers and Child Health Assessments (CHAs) for children. The CHaPS is delivered by child health nurses in a range of settings including standalone child health clinics, clinics based in community health centres, Child and Family Centres and government schools.

A central plank of the Play2Learn+ program is attendance at Launching into Learning (LiL) sessions. This program has been shown to promote school readiness and later achievement. An analysis of results by the Department of Education (2014) found that, compared with those who did not attend LiL, children who participated regularly (defined as attending at least 75% of sessions) were significantly more likely to achieve all markers on Kindergarten Development Check (KDC), were significantly more advanced in reading and maths in their first year of school, and had higher Year 3 NAPLAN scores. On average, students from higher socioeconomic backgrounds had greater participation rates than those from lower socioeconomic backgrounds. While students from all socioeconomic backgrounds made significant gains in educational performance from regular participation in LiL, students from disadvantaged socioeconomic backgrounds benefited most.



### 3. PROJECT AIMS AND DELIVERABLES

Given its longstanding history of work in Tasmania and our understanding of Tasmania's unique context, as well as its expertise in early childhood development and evidence synthesis, the Centre for Community Child Health (CCCH) was commissioned by the Department of Social Services (DSS) to provide an evidence base for outcomes proposing to use in PBO Trial 2. The task was to provide an overview of existing evidence relating to the long-term impacts of school readiness on health and wellbeing outcomes, as well as potential savings in avoided costs and revenue at the federal and state levels of government. Specifically, the review was to summarise the evidence related to the following:

1. The impact of school readiness on school achievement, including (but not limited to) AEDC and NAPLAN outcomes, school completion, and higher education and employment opportunities.
2. The relationship between school readiness (among disadvantaged children), and service and systems usage (e.g. income support, health services, and the justice system), with a particular focus on how this can impact government expenditure at the federal and state level.
3. How this evidence applies to the unique Tasmanian context, where the Payment by Outcome Trial 2 program will operate.
4. Likely benefit(s) of improved school readiness and participation among disadvantaged children, specific to the Commonwealth.



## 4. METHODOLOGY

To address the research questions, a rapid review was conducted. A rapid review is a method of knowledge synthesis that expedites the process of undertaking a conventional systematic review by omitting some of the steps of a traditional systematic review in order to generate evidence in a more resource-efficient manner (Hamel et al., 2020). The Cochrane Rapid Review Method framework (Garritty et al., 2020) was used to facilitate best practice, transparency, and replicability.

### 4.1 Setting the research question

The research questions were established in an iterative process with the Department. The authors developed a protocol which included inclusion and exclusion criteria. This supported the title, abstract and full-text review process.

### 4.2 Identifying relevant studies

Searches were carried out in October 2021 in the following electronic databases: [A+ Education \(Informit\)](#), [ERIC \(ProQuest\)](#), and [Cochrane CENTRAL](#). To ensure consistency, the same key words and search terms were used across all databases (Table 1).

Table 1: Search terms

Search terms	Key words
Early childhood education	Early Childhood Development, Preschool Education, Kindergarten, school readiness, ECEC, early childhood education
Cost benefit analysis	Costs and Cost Analysis, Health Care Costs, Economics, Investment, Return on investment, Savings, Government
Long-term	Intervention, Cognitive Development, Academic Achievement, Vulnerable outcomes, Longitudinal

Key words and search terms in each category were combined separately using the Boolean operator 'OR' and all 3 categories were combined using the Boolean operator 'AND'. Primary studies, systematic reviews, and grey literature in English only, were included.

#### Journal search

A manual search of the following relevant journals was carried out in October 2021:

- Early Childhood Research Quarterly
- Australasian Journal of Early Childhood
- International Research in Early Childhood Education (IRECE)
- Early Childhood Education Journal
- Early Education and Development (EE&D)
- Journal of Early Childhood Literacy



## Reference lists

References from all the full text documents were reviewed until no new relevant documents were found.

## Study selection

The second author independently reviewed all titles and abstracts against inclusion/exclusion criteria. Full text of all selected articles was reviewed by the first author, who identified relevant articles to be included in the final list against inclusion/exclusion criteria.

## Synthesis

A preliminary descriptive numerical summary of the data was undertaken, followed by analysis according to themes identified within the research questions.

## 4.3 Outline of report

The report begins with a review of how children (and families) develop and learn, and the key factors affecting child development and family functioning. This overview is needed in order to understand the role that early childhood services can play in shaping school readiness and later development, as well as the limitations of that role.

The next three sections address the key questions posed by DSS, beginning with the evidence regarding school readiness – what it is, how it relates to future academic achievement and employment, and the factors that shape it. This is followed by an analysis of the theory of change underpinning the Play2Learn+ intervention, including a consideration of the limits of what this program can achieve. In the third of these key sections, the evidence regarding the cost benefits to government is reviewed – what economic benefits can be expected, what future costs will be avoided, and what is the cost of not investing in early childhood programs.

The final section of the report summarises the key findings and draws key conclusions.



## 5. FACTORS AFFECTING EARLY CHILD DEVELOPMENT

This section outlines key findings regarding how children (and families) develop and learn, and the key factors affecting child development and family functioning. This overview is needed in order to understand the role that early childhood services can play in shaping school readiness and later development, as well as the limitations of that role.

### 5.1 How children (and families) develop and learn

**The early years are critically important for development** (Belsky et al., 2020; Black et al., 2017; Britto, 2017; Britto et al., 2017; NASEM, 2019a; Shonkoff & Richter, 2013; Siegel, 2020; Sroufe, 2021). What happens during this period can have lifelong consequences for children's health and wellbeing (Centre on the Developing Child at Harvard University, 2010; Fox et al., 2010; Shonkoff et al., 2012; Zeanah & Zeanah, 2018). They establish a foundation of development that will help children grow, learn and thrive.

**The first 1000 days – the period from conception to the end of the second year – are particularly important** (Berry, 2017; CCCH, 2018; Darling et al., 2020; Karakochuk et al., 2017; Miguel et al., 2019; Moore et al., 2017). This is the period when we are most 'developmentally plastic', that is, most responsive to external influences (Ismail et al., 2017). As a result, experiences and exposures during this period have a disproportionate influence on later health and development (Gluckman et al., 2015; Heindel & Vandenberg, 2015; Prescott, 2015).

The key skills learned in early childhood include communication, language and literacy skills; numeracy and other non-verbal cognitive skills; self-regulation; and social and emotional wellbeing (NASEM, 2019a; OECD, 2015; Raver & Blair, 2016; Shuey & Kankaraš, 2018). Mastering these skills early is important for children's wellbeing in the early years, but also has long-term benefits for schooling and adulthood: later life outcomes that are linked with early learning include physical health, mental health, education, socioeconomic status, employment, antisocial or criminal behaviours, relationship quality, leadership and social engagement (Shuey & Kankaraš, 2018). For those who do not master these skills early, making up ground later in life can be difficult.

**Children learn / adapt from birth and their development and learning is cumulative**, with later development and learning building upon earlier learning and development (Cunha & Heckman, 2009; OECD, 2021; Sroufe, 2021). Development always builds upon itself, with each emerging capacity providing the foundation for future development (Sroufe, 2021). Early learning makes it easier to acquire additional knowledge and skills in the future (Shuey & Kankaraš, 2018). It gets harder and more expensive to change children's trajectories as they get older.

**Children's health and development are strongly shaped by the social, economic and environmental conditions into which they are born and grow** (Braveman et al., 2011; Lovell & Bibby, 2018; Marmot & Wilkinson, 2006; Moore et al., 2015, 2017; Pillas et al., 2014; Ratcliff, 2017; Shuey & Kankaraš, 2018; Spencer, 2018; Tarazi et al., 2016; WHO Commission on the Social Determinants of Health, 2008). These social conditions, known as the *social determinants of health*, ultimately work through biological pathways to shape our health and wellbeing. A systematic review of European studies of social inequalities in early childhood health and development by Pillas and colleagues (2014) found that a range of social determinants – neighbourhood deprivation, lower parental income/wealth, lower educational attainment, lower occupational social class, parental unemployment, higher parental job strain/heavy physical occupational demands, lack of housing tenure, and material deprivation in the household – were all independently associated with a wide range of adverse health and developmental outcomes in early childhood. This in turn shapes school readiness. For instance,



studies have found that children experiencing housing instability or homelessness have lower school readiness skills and academic achievement compared to the general population of children (Manfra, 2019; Ziol-Guest & McKenna, 2014).

**Children continue to be shaped by their environments as they grow.** Important as the early years are, development is probabilistic rather than deterministic (Belsky et al., 2020; NASEM, 2019a; Sroufe, 2021; Sroufe et al., 2020): early exposures and experiences set children on developmental trajectories, but these can be altered if there are significant changes in the environments that have shaped their early development. Part of the reason why early development is predictive of later development is that the environments that have shaped early development tend not to change (Moore, 2007). This highlights the need to provide children who have stressed or deprived early experiences with more caring and responsive environments as they grow.

**Home learning environments play a profoundly important role in the development of young children** (Axford et al., 2018; Melhuish, 2010, 2015; Phillips & Lowenstein, 2011; Shuey & Kankaraš, 2018; Yu & Daraganova, 2015). A positive home learning environment has benefits for children's cognitive, social and physical development over and above the effect of socio-demographic factors such as parent education and family income (Axford et al., 2018). When children are provided with a range of learning opportunities in the home, their cognitive, language and social development all improve (Fox et al., 2015; Heckman & Mosso, 2014; Melhuish, 2015; Shuey & Kankaraš, 2018). The home learning environment can have up to twice the effect of early childhood programs, which limits the extent to which even high-quality early childhood services can compensate for inadequacies in the child's home learning environment (Melhuish, 2015). Children from advantaged homes typically receive more enriched home learning, are read to more, hear more words, have more books and are taken on more out-of-home activities, whereas children in chaotic households or experiencing high levels of risk have poorer outcomes and receive poorer quality home learning (Axford et al., 2018; Shuey & Kankaraš, 2018; Yu & Daraganova, 2015).

**It is important to intervene as early as possible in the developmental sequence in order to have maximum preventive effect** (Boyce et al., 2021; Fox et al., 2015; Moore & McDonald, 2013; NASEM, 2019a; Prevention Institute, 2019; Yousafzai, 2020). The most effective form of prevention is to improve the early lives of disadvantaged children (Heckman, 2012). This means focusing much more on improving the conditions under which families are raising young children (Moore & McDonald, 2013).

## 5.2 Factors that impact on development and learning

**The social conditions in which people live have a greater impact on their health and development than the health and other services they receive** (Braveman & Gottlieb, 2014; CCCH, 2018; Moore, 2021a; Moore et al., 2017; Prevention Institute, 2019). This is especially true for those living in the most challenging circumstances, including families with young children. Finding ways of improving the conditions under which such families are raising their children must become a major goal for communities and service systems (Moore, 2021a; Ratliff, 2017).

**Poverty.** The latest analysis of Australian data shows that 13.6% of the population was living in poverty in 2018 (Davidson et al., 2020a). This included 774,000 children aged under 15. This is considerably higher than in many other developed countries, and has remained high for over 30 years (Productivity Commission, 2018). This is a concern because children from households that experience several years of income poverty are more likely to have substantially worse health and impaired psychological well-being, and impaired cognitive and emotional development throughout their lifespan (Duncan et al., 2013; Hackman et al., 2010; Luby, 2015; Noble et al., 2015; Vera-Toscano & Wilkins, 2020; Yoshikawa et al., 2012). Children from a disadvantaged background often struggle to move up the economic ladder. Experiencing just a single year of income poverty during childhood is associated with lower earnings in early adulthood, compared with never having experienced poverty as a child, and experiencing multiple years of income poverty during childhood worsens the socio-economic outcomes of children in adulthood (Vera-Toscano & Wilkins, 2020).

**Poverty compromises family functioning and limits parents' capacity to provide the conditions children need for healthy development and learning** (Axford et al., 2018; Braveman et al., 2018; Cooper & Stewart, 2017; Moore et al., 2017; Noble et al., 2015; Yoshikawa et al., 2012). Family income affects a wide range of children's outcomes, including their cognitive development and school achievement, social and behavioural development, and health (including birthweight)



(Cooper & Stewart, 2017). Poverty adds to parental stress and increases the likelihood of maternal mental health problems, hence compromising care-giving. It can also reduce the quality and regular availability of nutrition provided, limit the capacity of families to provide their children with adequate learning opportunities, and expose children to sustained levels of stress (Axford et al., 2018; Braveman et al., 2018; Cooper & Stewart, 2017; Moore et al., 2017; Yoshikawa et al., 2012). The cumulative impact of these factors has adverse effects on children's early development and school readiness. The evidence shows that school readiness is shaped both by the socioeconomic status of the home (Lipscomb et al.,; Jeon et al., 2014) as well as that of the general community in which they live (Hanson et al, 2011; Jeon et al., 2014).

**Economic, social and health inequities.** Inequities are preventable differences in health and wellbeing outcomes between those who are economically or socially disadvantaged and those who are better off (Braveman, 2006, 2014). As noted already, in Australia, there is a wide gulf between the incomes of those with the lowest and those with the highest incomes, and this gap has grown wider over the last 20 years or so (Davidson et al., 2020b). This means that Australia's continued prosperity has not been shared equally among families. While most families have benefited from economic and social change, those with fewer resources have not, and are struggling to cope with the demands of parenting in a rapidly changing world. A report on the state of Australia's mothers (Save the Children, 2016) found that where mothers lived, their cultural background and their economic resources helped determine their health and wellbeing. Mothers living in rural areas, mothers who are Aboriginal or Torres Strait Islander, and mothers in lower socio-economic households are generally worse off across all indicators examined, including health (maternal mortality, child mortality, antenatal care), education (child development, women's education), income (average household income) and relative socio-economic disadvantage.

As a result, there are significant inequities in children's health, development and wellbeing (Goldfeld et al., 2018a, 2019, 2021; Keeley, 2015; Marmot, 2015, 2016; Sollis, 2019). Maternal and child health inequities emerge even before birth (Keating et al., 2020). These inequities follow social gradients: the more disadvantaged one's circumstances, the worse one's long-term health and wellbeing outcomes are likely to be (Adler & Stewart, 2010). Social gradients represent more than just disparities between the poor and the wealthy, but are continuous: at any given point along the socioeconomic continuum, one is likely to experience inferior health outcomes to those above them (Marmot & Wilkinson, 2006). For children, it is the circumstances in which they live, learn and develop that drive differential health and developmental outcomes: the more disadvantaged their circumstances, the poorer their health and developmental outcomes (Goldfeld et al., 2018a).

These inequities in health, development and wellbeing are evident from birth, and, despite overall improvements in health outcomes, continue to grow (Berry, 2017). Gaps in both cognitive and noncognitive skills between children from advantaged and disadvantaged backgrounds open up in infancy, and widen progressively in the preschool years (Heckman & Mosso, 2014; Prior et al., 2011). These disparities compromise future education, employment and opportunities (Brinkman et al., 2012; Goldfeld et al., 2018a, 2021; Heckman & Mosso, 2014; Woolfenden et al., 2013).

Analyses of AEDC results clearly reveal social gradient effects. Brinkman and colleagues (2020) summarise research that has explored developmental vulnerability in relation to community and family level socio-economic measures in Australia. Using the Australian Bureau of Statistics (ABS) Socio-Economic Indices for Areas (SEIFA) measures, often used as indicators of the social disadvantage in Australian communities, they found that, across each of the five AEDC collections (2009, 2012, 2015, 2018, 2021), a clear gradient of socioeconomic inequality is evident in child development outcomes for communities. That is, in communities with fewer socio-economic resources (categorised by lower SEIFA quintiles) the percentage of children with developmental vulnerabilities tends to be higher than in more affluent communities (categorised by higher SEIFA quintiles).

**Social exclusion** is also a significant problem. Miranti and colleagues (2018) found that, in 2016, one in six Australian children aged 0-14 years were living in poverty but many children were also socially excluded, lacking the opportunities and family resources to be socially connected and to be able to participate fully in their local communities. Among other adverse effects, child social exclusion affects educational attainment – the prevalence of low AEDC scores was twice as high in areas of highest social exclusion rates compared to those with the lowest rates. A local community's risk of child social exclusion is highly persistent over time. In those areas where social inclusion rates improved, the key drivers of improvement in child social exclusion were above-average improvement in the socio-economic well-being of families in these areas and in their educational attainment, and reduced exposure to increases in housing stress.





## 5.3 Discussion

There are two key points to note from this overview of child development. The first is the importance of the very earliest stages of development, from conception to the end of the second year. What happens during this period can have life-long consequences. All of this occurs well before the Play2Learn+ program commences, and raises questions about what forms of support should be provided to families during these crucial early years, and how the Play2Learn+ program links with and builds on these early supports.

The second point is that child and family functioning are shaped by the conditions in which the families are living – their social and physical environments and their access to material basics. These conditions have a major influence on the capacity of the family to provide their children with appropriate nurturing care as well as safe and stimulating home learning environments. These conditions can have a greater impact on child and family outcomes than do the services they receive. There are large socioeconomic variations in the conditions under which families are living, contributing to the socioeconomically-graded outcomes observable in children and families. Services will always struggle to overcome these variable outcomes as long as the underlying factors that produce them are not addressed as well.



## 6. EARLY CHILDHOOD EDUCATION AND SCHOOL READINESS

This section reviews the evidence regarding school readiness – what it is, how it relates to future academic achievement and employment, and the factors that shape it.

### 6.1 School readiness

#### What is school readiness

School readiness is a misleading term in that it suggests that it is a unidimensional quality of the child. In fact, school readiness is multidimensional and does not reside solely in the child, but reflects the environments in which children find themselves – their families, early childhood settings, schools, neighbourhoods, and communities (Kagan & Rigby, 2003). School readiness has four interrelated components: children's readiness for school, school's readiness for children, and the capacity of families and of communities to provide developmental opportunities for their young children (Centre for Community Child Health, 2010; Emig et al, 2001). Understood in this light, promoting school readiness is not solely a matter of working directly with the child to ensure they are 'ready', but also involves ensuring that the school is ready for the child (understands the child's needs and has programs to address these), and that the family and the community are able to provide the child with the experiences and learning opportunities during the preschool years that will ensure positive development and wellbeing.

In Australia, school readiness is usually assessed via the Australian Early Development Census (AEDC) (<https://www.aedc.gov.au/>). This is based on teachers' ratings of children's development in their first year of school. The AEDC collects data relating to five key areas or domains of early childhood development: physical health and wellbeing; social competence; emotional maturity; language and cognitive skills (school-based); and communication skills and general knowledge. As discussed below, the AEDC domains have been shown to predict later health, wellbeing and academic success. In Tasmania, early childhood programs such as the Launching into Learning are monitored by their impact on AEDC scores when the children reach school.

#### Why is school readiness important

**School readiness is important because it is predictive of later school academic achievement** (Brinkman et al., 2013; Christensen et al., 2021; Phillips et al., 2017; Ricciardi et al., 2021; Thomas, 2021). Brinkman and colleagues (2013) examined the relationship between children's AEDC scores and their later literacy and numeracy outcomes as assessed by the National Assessment Program Literacy and Numeracy (NAPLAN) standardised testing in primary school in Australia. The AEDC scores predicted children's literacy and numeracy outcomes throughout their primary school years. The association is equally strong in predicting scores at years 3, 5 and 7 (ages 8, 10 and 12). Another Australian study (Warren & Haisken-DeNew, 2013) used data from the Longitudinal Survey of Australian Children and found that preschool attendance was positively associated with higher year-3 NAPLAN scores, but only among those whose pre-school teacher was highly qualified. A comparable US study by Ricciardi and colleagues (2021) used a large-scale, ethnically diverse, and largely low-income sample of US children to assess the predictive power of a wide range of school readiness skills measured at age four in preschool on authentic academic outcomes up to Grade 5. Specifically, they explored the extent to which cognitive, language, fine motor, gross motor, and socioemotional skills at age four are related to Grade Point Average (GPA), standardised test scores, likelihood of retention, and likelihood of suspension during the primary school years. The findings indicated that each of these measures of school readiness was related to later academic outcomes, even when controlling for demographic characteristics and other measures of performance in preschool. Preschool socioemotional readiness skills were consistently related to outcomes throughout the primary school years.



A study of Australian children in their first year of school (Christensen et al., 2021) examined patterns of school readiness based on child, family, school and community characteristics, and looked at the relationship between these patterns of school readiness and subsequent outcomes (reading comprehension, school absence and emotional and behavioural difficulties). This study identified four distinct groups: a developmentally enabled group (70 per cent of children), a parenting risk group (16 per cent of children), an emotionally immature risk group (7 per cent of children) and a language and developmental risks group (7 per cent of children). The four profiles showed predicted different patterns of low reading comprehension and emotional and behavioural difficulties at age 8.

Although developmental vulnerabilities at school entry are predictive of poorer academic outcomes in the school years, the relationship is probabilistic rather than deterministic: the maintenance of gains made in early childhood depends upon the ongoing quality of the support received in school. However, children who have received high quality ECE intervention will be more likely to do well academically than those who start the same school without the benefit of attending an ECE program.

These general findings are illustrated in a study by Lamb and colleagues (2015) that examined Australian children's educational trajectories over four points in time: primary school entry, secondary school entry, secondary school completion, and educational involvement in early adulthood. They found that at least six in 10 of all children starting school get through early and middle childhood with the kinds of academic and social skills needed for later success. The same proportions complete school and are fully engaged in education or work by their mid-20s. Some children begin school not developmentally ready and remain behind across all stages. This study estimated that this affects up to 10 per cent of the population. However, children can be succeeding academically at one point but fall behind by the next stage. There are also points at which young Australians are behind or missing out, but recover over following stages succeeding at the following milestone. Approximately 12 per cent of children were not ready for school (as indicated by their AEDC scores) but achieved the academic learning benchmark at Year 7.

There are two points to note here. First, good quality early childhood experiences are not an inoculation against later adverse experiences or suboptimal schooling, but they do increase the likelihood of children succeeding academically in school. Second, the quality of schooling matters. As Phillips and colleagues (2017) have pointed out, children's early learning trajectories depend on the quality of their learning experiences not only before and during their preschool year, but also in the following year: classroom experiences early in primary school can help sustain and amplify preschool learning gains. Cunha and Heckman (2006) make the same point in economic terms: early investment has to be followed up by later investment in order for the early investment to be productive. Improving the alignment between preschool and the early elementary grades may help sustain the initial boost in cognitive and noncognitive skills from preschool participation (Karoly & Augur, 2016). However, children from disadvantaged backgrounds may be less likely to receive high quality schooling that will help sustain any early learning gains they have made: communities with low proportions of school-ready learners are more likely to be served by schools with low standards of performance (Lamb et al., 2015).

## Current levels of school readiness in Tasmania

According to the 2021 AEDC results (Department of Education, Skills and Employment, 2022), the majority of Australian children were identified as 'developmentally on track' for each of the five AEDC domains, consistent with the five collections to date. Between 2018 and 2021, however, the percentage of children who were on track on five domains decreased for the first time since 2009 (from 55.4 per cent in 2018 to 54.8 per cent in 2021). The percentage of Tasmanian children who are developmentally on track in all five domains was 52.9 per cent.

While the gap between Aboriginal and Torres Strait Islander and non-Indigenous children has narrowed since the first AEDC report in 2009, there are still two in five Aboriginal and Torres Strait Islander children who are vulnerable in one or more key areas of development.

The 2021 AEDC data also show a small but significant increase in the percentage of children who were 'developmentally vulnerable'. In 2021, the percentage of children developmentally vulnerable on one or more domain(s) increased from 21.7 per cent in 2018 to 22.0 per cent in 2021. The percentage of children who were developmentally vulnerable on two or more



domains also increased from 11.0 per cent in 2018 to 11.4 per cent in 2021. The corresponding figures for Tasmania are higher, with 23.8 per cent rated as vulnerable on one or more domains, and 11.9 per cent on two or more.

However, these percentages are much higher in the socio-economically disadvantaged communities that are the focus of the Play2Learn+ project. Children living in such areas are twice as likely to be vulnerable on one or more AEDC domains and three times more likely to be vulnerable on two or more domains compared to children living in communities with high levels of socio-economic advantage. In 2021, there was increased developmental vulnerability on one or more and two or more domains for children across the socio-economic spectrum but more so for children living in our most socio-economically disadvantaged areas, reversing previous progress.

This can be seen in Table 2 which compares the Australian and Tasmanian levels of vulnerability with those of three of the target areas in this project.

**Table 2: 2021 AEDC vulnerability levels for Australia, Tasmania and three target areas**

	Percentage vulnerable on one or more domains	Percentage vulnerable on two or more domains
Australia	22.0	11.4
Tasmania	23.8	11.9
Rokeby	31.0	23.8
Glenorchy	27.9	16.3
Clarendon Vale	48.5	30.3

The Commissioner for Children and Young People (Tas) (2020) reports that, despite Tasmania's best efforts over time, many wellbeing outcomes of children and young people in Tasmania have remained stagnant or worsened. This appears to be true of young children, as shown by measures such as the AEDC and the Kindergarten Development Check (KDC). AEDC results indicate that the percentage of children being developmentally vulnerable has remained unchanged since 2012. The KDC results are even more disheartening. The KDC is an assessment administered on two occasions (Term 1 and Term 4) during the kindergarten year for the early identification of students at risk of not achieving expected developmental outcomes. Between 2013 and 2018, the percentage of children meeting all 21 markers on the Kindergarten Development Check by the end of the kindergarten year has declined steadily from 74.5 per cent to 67.8 per cent.

## 6.2 Factors that impact on school readiness

An evidence review of the predictors of school readiness by the Child and Family Research Partnership (2018) found a wide range of factors contributing, including: parental warmth, acceptance, and responsiveness; the home learning environment; current health status and low birth weight; and poor nutrition. The evidence also shows that regular attendance at high-quality preschool education programs also helps ensure that children commence school ready and able to take advantage of the learning and social opportunities that schools provide.

### Benefits of preschool education

**Numerous reviews of the evidence have concluded that high-quality preschool programs have many benefits for children** (Bartik, 2014; Friedman-Krauss et al., 2019; Karoly & Auger, 2016; Lynch & Vaghul, 2015; Melhuish & Barnes, 2021; Phillips et al., 2017; Pianta et al., 2021; Thomas, 2021; Yoshikawa et al., 2013). There are direct benefits for children's physical and mental health (Friedman-Krauss et al., 2019) as well as longer-term health, social and academic benefits. Bartik (2014) argues that we have better evidence for the effectiveness of early childhood education than for almost any social or educational intervention. According to Melhuish and Barnes (2021) the evidence overwhelmingly supports a causal interpretation of the long-term effects of preschool education.

**Early childhood education improves school readiness and makes a significant contribution to subsequent****educational achievements** (Amadon et al., 2022; Goldfeld et al., 2016; Holmes, 2018; Karoly & Auger, 2016; Lynch & Vaghul, 2015; Meloy et al., 2019; Pascoe & Brennan, 2017; Phillips et al., 2017; Sylva et al., 2010; Taggart et al., 2015; Sincovich et al., 2020; Shuey & Kankaraš, 2018; Thorpe & Staton, 2019; Yoshikawa et al., 2013).

Australian studies show that preschool attendance has a significant positive impact on development at school entry as measured by the AEDC (Falster et al., 2020; Goldfeld et al., 2016; Oberklaid et al., 2012; Sincovich et al., 2020). Children who do not attend preschool are more likely to be developmentally vulnerable on one or more domains for the AEDC, regardless of their socioeconomic backgrounds (Oberklaid et al., 2012). In a large-scale study of children in New South Wales, Falster et al. (2021) examined the relationship between developmental outcomes (as measured by the AEDC) and preschool attendance compared with home-based care. They found that preschool attendance was associated with reduced vulnerability scores, but the effect was greater from non-Indigenous children than for Indigenous children. Another Australian study (Goldfeld et al., 2016) found that attendance at preschool was associated with reduced levels of vulnerability on the AEDC when compared with other ECEC experiences, or care exclusively by parents. This effect was evident for children living in both advantaged and disadvantaged communities. The positive impact of preschool programs on school readiness scores is also borne out by US reviews and studies (e.g. Holmes, 2018; Karoly & Auger, 2016; Lynch & Vaghul, 2015).

High-quality preschool programs also contribute to positive academic achievements in school and beyond. A US study of the long-term outcomes of a preschool attendance by Holmes (2018) found that, compared to those who did not attend, children who attended preschool had higher academic scores throughout their school years, attended more regularly, and were more likely to complete high school. Another evidence review by Karoly and Augur (2016) found that high-quality preschool programs show sustained benefits for other aspects of school performance other than achievement scores, such as lower rates of special education use, reduced grade repetition, and higher rates of high school graduation.

The benefits of early childhood education are wide ranging and long lasting (Bakken et al., 2017; Barnett et al., 2017; Centre for Education Statistics and Evaluation, 2018; Garcia et al., 2021; Melhuish, 2015; Melhuish & Barnes, 2021; O'Connell et al., 2016; Pascoe & Brennan, 2017; Shuey & Kankaraš, 2018; Sylva et al., 2010; Taggart et al., 2015; Watts et al., 2018). It is linked with higher levels of employment, income and financial security, improved health outcomes and reduced crime (Pascoe & Brennan, 2017). It helps build the skills children will need for the jobs of the future. They are more likely to graduate from high school and attend college at higher rates. Once these children enter the labour force, their incomes are higher, and so are the taxes they will pay back to society (Lynch & Vaghul, 2015).

There are social benefits as well. An evidence review by Lynch and Vaghul (2015) found that when children who attended high-quality preschools become juveniles and adults, they are less likely to engage in criminal activity, reducing criminality overall. As adults, they are likely to be in better health, with lower incidences of depression and reduced consumption of tobacco. There is even evidence of intergenerational benefits. Participants in the Perry Preschool Project have been followed into late midlife, and their children into adulthood. Garcia and colleagues (2021) report that there have been substantial benefits not only for the original participants, but also for their siblings and their children. The program improves health and healthy behaviours, increases labour income, and reduces crime and the cost to the criminal justice system.

Can these intensive early childhood programs be scaled up and delivered to all children? In the US, less intensive EC education models such as Head Start<sup>4</sup> produce the same types of effects as more intensive programs such as AbcEdarian and Perry HighScope programs, but at least some of the effects are smaller (Barnett, 1998; Duncan & Magnuson, 2013; Elango et al, 2015; Villareal, 2019). A recent large-scale analysis of Head Start data (Bailey, Sun & Timpe, 2020) found that Head Start generated large increases in adult human capital and economic self-sufficiency, including a 0.65-year increase in schooling, a 2.7-percent increase in high-school completion, an 8.5-percent increase in college enrolment, and a 39-percent increase in college completion. These estimates imply sizable, long-term returns to public investments in large-

4 Head Start is a federally-funded preschool program that is free of charge to low-income families who have 3- to 5-year-old children. It uses a federally mandated curriculum with the goal of preparing at-risk children to succeed in school.



scale preschool programs. Villareal (2019) reports on the outcomes of San Antonio's PRE-K 4 SA initiative that provides early evidence that high quality prekindergarten can be taken to scale and delivered through a public system.

Pianta and colleagues (2021) summarise the results of a series of studies they conducted of the benefits from enrolling in early educational programs, whether entering at 3, 4, or 5 years of age (Ansari et al., 2019, 2020a, 2020b, 2021; Nguyen et al., 2020; Pianta et al., 2018, 2020). Key findings are:

- Enrolment contributes to students' learning and development the year in which they enrol, and they enter the following year performing significantly better than peers without those prior experiences (Ansari et al., 2019, 2020). The gains are significant, closing half the skills gap between children from under-resourced environments and their more resourced peers (Ansari et al., 2020). The gains are most apparent for early skills in language and communication, reading and math, and cognitive skills such as working memory and inhibitory control, all critical elements of later academic success (Ansari et al., 2020).
- The boost is most evident when children with early education experience start a new school year well ahead of peers who did not have that opportunity the year before. For example, students who attended a preschool program at age 3 were ahead of their peers as 4-year-olds at the start of their preschool year.
- The skills boosted by early education do not fade out. Although differences between children with and without prior early educational experiences diminish, this is entirely because children catch up when they get the boost of coming to school for the first time. The boost is more likely to be sustained when followed by another year or more of high-quality learning environments.
- The classroom qualities that sustain early learning involve stimulating, supportive teacher-student interactions and relationships and challenging learning-focused activities taught in a sensitive and responsive manner (Pianta et al., 2020). If children are fortunate enough to land in classrooms like these year in and year out, their learning is sustained (Nguyen et al., 2020). Teachers' emotional well-being matters for how well they can provide these elements in their classrooms (Ansari et al., 2020b).

A key finding from this series of studies is that children benefit from regular attendance at ECE programs regardless of the age they start, but gain more benefits the earlier they do so.

Overall, the evidence shows that preschool education is one of the most significant investments in education and productivity that governments make (O'Connell et al., 2016). It has positive impacts on all children and is a key strategy for overcoming the impact of early disadvantage on educational outcomes and life chances (Pascoe & Brennan, 2017; Yoshikawa et al., 2013).

## Quality of ECE services

**The quality of ECEC services matter: high-quality programs consistently generate more positive child outcomes** (Axford et al., 2018; Barnett et al., 2017; Brinkman et al., 2017; Centre for Education Statistics and Evaluation, 2018; Karoly & Augur, 2016; Lynch & Vaghul, 2015; Melhuish & Barnes, 2021; Shuey & Kankaraš, 2018; Sylva et al., 2010; Taggart et al., 2015; Tayler et al., 2016; Torii et al., 2017; Van Huizen & Plantega, 2018; Warren et al., 2016). The positive effects of early childhood education programs are contingent upon, and proportionate to, their quality (Centre for Education Statistics and Evaluation, 2018).

Two dimensions of quality matter: structural quality and process quality. *Structural quality* involves features such as child-staff ratios, workforce training and professional development, and size of group or classroom. The evidence indicates that it is generally better to have fewer children per member of staff, early years teachers with a formal degree and some specialised training in early childhood education or child development, and smaller class sizes (Axford et al., 2018; Tayler et al., 2016).

These structural quality features are a necessary but not sufficient condition for effective ECEC services. What is also needed are the *process quality* features, which focus on the interactions between staff and children, and teacher-directed learning activities (Axford et al., 2018; Tayler et al., 2016; Torii et al., 2017; Yoshikawa et al., 2013). The quality of adult-child interactions in ECEC settings is the most potent source of variation in child outcomes (Chazan-Cohen et al., 2017;



Taylor et al., 2016; Yoshikawa et al., 2013), although the amount of exposure to these settings also plays a role (Phillips & Lowenstein, 2011). The nature of the relationships between staff and children is central to making ECEC programs positive developmental experiences for children: learning happens within the context of trusting relationships/secure attachments and responsive interactions (Chazan-Cohen et al., 2017).

An evidence synthesis by Melhuish et al. (2013) found that the following quality characteristics of early years programs were important for enhancing children's development and learning:

- Adult-child interaction that is responsive, affectionate and readily available
- Well-trained staff who are committed to their work with children
- A developmentally appropriate curriculum with educational content
- Ratios and group sizes that allow staff to interact appropriately with children
- Supervision that maintains consistency in the quality of care
- Staff development that ensures continuity, stability and improving quality
- Facilities that are safe, sanitary and accessible to parents

Effective early childhood education is delivered through play-based learning, building on children's interests (Early Childhood Australia, 2013). Play-based learning builds on a child's natural sense of enquiry and discovery through hands-on exploration of the world around them, and helps them make sense of the world (OECD, 2015a; Pascoe & Brennan, 2017). Young children learn best when they are active decision-makers in their learning (DEEWR, 2009).

Other qualities identified in reviews (e.g. Axford et al., 2018) include encouragement of high levels of parent engagement in their children's learning, and education and social development viewed as complementary. The Centre on the Developing Child (2016) emphasises the importance of establishing clear goals and appropriately targeted curricula. Programs for young children are most effective when they implement an age-appropriate curriculum that provides engaging activities designed to achieve clearly defined goals (Phillips et al., 2017). However, when successful services are not described precisely, they are difficult to replicate and impossible to scale. In contrast, when an explicit theory of change is articulated and services are well-defined, pre-identified impacts are more likely to be achievable, replicable, and scalable.

This does not mean that early childhood education programs should be seeking to actively prepare children for school by focussing on pre-academic skills (Christakis, 2016). The best way of promoting school readiness is not to focus on preparing children for the next environment, but ensuring that they have the most positive experiences in the present one (Gopnik, 2016). As Oberklaid and colleagues (2012) observe, school readiness 'is not just a measurable set of skills that appear just before school entry but the cumulative outcome of the child's experiences in the first five years of life.' In the key terms used in Australia's national ECEC framework, the Early Years Learning Framework (EYLF) (Council of Australian Governments, 2009), 'being' is as important as 'becoming'.

The evidence for the effectiveness of preschool education programs always stresses that the programs must be of high quality. But, as Phillips and colleagues (2017) note, not all preschool programs are of high quality or are equally effective. What happens when children attend poor quality programs? Melhuish and Barnes (2021) summarise the evidence regarding preschool programs for the general population, and conclude that high quality programs produce benefits but poorly implemented programs may have limited or no effects. It may even be that poor quality programs are harmful for children from disadvantaged backgrounds. If so, such children have the most to gain from high quality programs and the most to lose from low quality programs. Some children, notably those growing up in poverty, appear to be more vulnerable to variation in the quality of ECE settings than do other children (Phillips & Lowenstein, 2011). Lower quality programs are experienced as more stressful by children (Gunnar et al., 2010; Sims et al., 2006).

In determining the benefits of preschool attendance, there are two other related questions to consider: *how much preschool is needed to ensure benefits*, and *when should children start*.

**In general, the longer children spend in preschool, the greater the benefits** (Bustamante et al., 2021; Fox & Geddes, 2016; Lamb et al., 2015; OECD, 2017; Reynolds et al., 2014; Richter et al., 2021; Sylva et al., 2010; Taggart et al., 2015; Yoshikawa et al., 2013). Studies that have compared the benefits of one year vs two years of preschool show that a second



year of preschool shows additional benefits (Bustamante et al., 2021; Fox & Geddes, 2016; OECD, 2017; Richter et al., 2021; Sylva et al., 2010; Taggart et al., 2015; Yoshikawa et al., 2013). A recent analysis of 430,000 children from 73 middle- and high-income countries (Richter et al., 2021) found that children who attended two years of preschool had higher scores on the Programme for International Student Assessments (PISA) at age 15 years compared with those who only attended one year. Other evidence indicates that children from disadvantaged backgrounds show the greatest benefits from two years of preschool: one year of preschool does not appear to be enough to close achievement gaps that are already present at age four (Fox & Geddes, 2016). (As discussed in Section 7, this supports the logic of the Play2Learn+ intervention.)

**Starting early yields higher benefits.** Children who arrive at school with few or no vulnerabilities as measured by the AEDC are more likely to have started attending early childhood programs earlier than those who do not (Lamb et al, 2015). Using longitudinal data, Bustamante and colleagues (2021) found that children from low-income backgrounds who had access to 24 months or more of high-quality early childhood education in their first five years were more likely to graduate from college and had higher salaries at age 26. In fact, the outcomes for these young adults who experienced sustained high-quality care were statistically indistinguishable from their higher-income peers.

However, it is not just a question of enrolment in a preschool program: how regularly children attend also matters. How regularly children attend the EC programs depends on a number of factors, including how accessible the services are. While the number of Australian children (aged up to 5 years) using early learning services has risen over the past 10 years, from just below 35 per cent in 2009 to nearly 45 per cent in 2018 (Thorpe & Staton, 2019), there is inequity in access to these services: children living in remote areas, children from Aboriginal or Torres Strait Islander backgrounds, children from non-English speaking backgrounds (NESB), and those with a disability are under-represented in early learning services (Thorpe & Staton, 2019). In addition, children from disadvantaged backgrounds are less likely to have access to high quality early childhood education (Lamb et al, 2015; Torii et al., 2017).

Moreover, while over 90 per cent of children in Australia are enrolled in a preschool program in the year before full-time schooling, actual attendance varies widely across states and territories (Thorpe & Staton, 2019). Several Australian studies have found that children from disadvantaged backgrounds are least likely to attend ECE services (Baxter & Hand, 2013; Biddle & Seth-Purdie, 2013; O'Connor et al., 2016; Wong et al., 2014) or do not attend consistently enough to gain the benefits (Gilley et al., 2015). An analysis of attendance at early childhood education and care services in a nationally representative sample of Australian children by Wong et al. (2014) found that children with multiple indicators of disadvantage were more likely to be in exclusive parental care and less likely to be using preschool or childcare than their peers. An analysis of the Australian E4Kids study (Gilley et al., 2015) found that children from homes with less employment, and more siblings, tend to use fewer hours of ECEC before school and/or start later (Gilley et al., 2015). Another Australian study (O'Connor et al., 2016) found that children from non-English speaking and Indigenous backgrounds and children living in disadvantaged communities all had substantially higher odds of not attending preschool.

## Who benefits most

**There is consistent evidence, both international and Australian, that, although quality preschool education can benefit middle-class children, disadvantaged children benefit the most** (Algan et al., 2021; Bakken et al., 2018; Brinkman et al., 2020; Cascio, 2019; Centre for Education Statistics and Evaluation, 2018; Cortáza, 2015; Elango et al., 2015; Karoly & Auger, 2016; Melhuish & Barnes, 2021; Pascoe & Brennan, 2017; Phillips et al., 2017; Shuey & Kankaraš, 2018; Slicker & Hustedt, 2020; Van Huizen & Plantega, 2018; Warren et al., 2016; Yoshikawa et al., 2013) and benefits are greater the earlier they start (Cornelissen et al, 2018). This is thought to be because the early education programs offer a larger improvement in the quality of the early environment for disadvantaged children compared to advantaged children (Elango et al., 2015).

Another group of children that gain particular benefit from attending high-quality preschool programs are those from families where the language spoken at home is different from the language of schooling (Burchinal et al., 2015; Elango et al., 2015; Phillips et al., 2017).





## Universal vs targeted programs

One issue of contention is whether it is better to target children who are most disadvantaged (and are therefore most likely to benefit) or to provide all children with high quality early childhood programs. A number of reviews have concluded that core early childhood services should be provided on a universal rather than a targeted basis (Bennett, 2007; Centre for Community Child Health, 2006; Melhuish & Barnes, 2021; Moore, 2008; Press, 2006). Melhuish and Barnes (2021) summarise the evidence regarding preschool programs for the general population, and conclude that, besides being of particular benefit for disadvantaged groups, there is strong evidence that preschool education can be beneficial for the general population.

There is also evidence of the potential benefits of children from different socioeconomic backgrounds being educated together (Cascio, 2019; Slicker & Hustedt, 2020). A US study by Cascio (2019) compared the impact of universal versus targeted preschool programs on children from disadvantaged backgrounds. She found that the children gained most from attending universal programs where the classmates came from a range of family incomes, rather than programs where they came from a more homogenous background. A review by Slicker and Hustedt (2020) found children from all income backgrounds benefit from attending socioeconomically diverse learning environments - in academic preparedness and in other ways that prepare them for success in a diverse workforce and society. Evidence suggests that children from low-income families benefit most from attending such programs, which can help reduce income-based gaps in school readiness.

## Parental engagement in ECEC services

**Although children from low-income families benefit most from preschool attendance, they are less likely to be enrolled** (CCCH, 2010). An inverse care law applies, such that families facing the greatest challenges are least likely to access the services they need (Eapen et al., 2017; Marmot, 2018; Woolfenden et al., 2020) and, as a result, are likely to require a disproportionately high level of support in later life (Caspi et al., 2016).

There are many reasons why families facing the most challenges do not enrol their children in preschool services. The complex and co-occurring problems these families face, such as lower family incomes, lower levels of parental education and intergenerational trauma, often undermine their efforts to care for their children as they would wish, or to carry through a particular practice or program that has been recommended. In a US study examining why parents from low-income families do not enrol their children in preschool programs, Crosnoe and colleagues (2016) found that the need to work and low parental education levels most consistently predicted enrolment. An Australian study investigating barriers to participation in ECEC among families experiencing disadvantage (Molloy et al., 2021) found that cost was a significant barrier, as well as families being unclear about the benefits of ECEC for their children. Parents were more likely to attend if they felt the staff were professionally trained and understood their child; that the EC service was inclusive, culturally aware, and culturally safe; and that the EC service collaborated with other key services that the parents used. In another study by this same group, Beatson and colleagues (2022) explored parent and service provider perspectives of the barriers and facilitators to participation in early childhood education programs. A major barrier reported by both groups was cost, not just the direct cost of the program, but also the indirect costs of transport, cumulative fees for families with several preschool-aged children, and lost work income when children contract illnesses while at the ECEC centre. Another significant barrier was family perceptions that it was a mother's role to educate and care for their child. Unless fully informed about the likely benefits of their child attending the EC service, parents failed to recognise the play-based programs being offered as educational, and were therefore less inclined to use the service.

A study undertaken in New South Wales and Victoria by The Smith Family (2021) identified a number of systemic issues that can affect child's enrolment and regular attendance at preschool:

- The system is complex, and families experiencing vulnerability have difficulties navigating the ECE system.
- There is currently no nationally agreed data set on preschool participation, so it is not possible to identify precisely who is missing out and why.
- Educators need more resources to support them to engage with vulnerable families – they struggle to find the time and the right training to build positive relationships with vulnerable families and to respond to the needs of the child.



This study identified the following series of stages that parents go through when engaging with ECE services:

- understanding the benefits of preschool
- finding the right preschool
- having a simple enrolment experience
- feeling welcomed and valued
- feeling respected and culturally safe (particularly for Aboriginal and Torres Strait Islander families)
- having support for children with additional needs.

Each of these stages present challenges that can derail the process of enrolling and attending regularly at preschool. However, the most important factor was the quality of the relationships between parents and service providers:

*We heard that relationships are everything. In all our interactions, the importance of connection, trust and the value of local relationships was emphasised. For families with low trust in government and government systems, building trust is critical to successful engagement with the preschool system. Relying on preschool services to initiate and nurture these relationships in the current environment is not always realistic, given the range of pressures on these services (The Smith Family, 2015).*

Other studies have shown that vulnerable parents are less likely to access and engage in services as they can be particularly sensitive to the manner in which services are delivered. Common problems include not trusting services, misperceiving what services offer, lacking the social skills and confidence to negotiate with professionals, and being easily intimidated or put off by perceived attitudes of staff or other parents (Anning et al., 2007; Attride-Stirling et al, 2001; Barlow et al., 2005; Carbone et al., 2004; Winkworth et al., 2009, 2010).

**The effectiveness of services to parents depends as much upon the way in the services are delivered as on what is delivered.** Services delivered in certain ways are consistently more effective in engaging families and ensuring greater ‘take up’ of services (Boag-Munroe & Evangelou, 2012; Cortis et al., 2009; Doel, 2010; Gadsen et al., 2016). An analysis of the evidence by Gadsen and colleagues (2016) identified a number of features and practices of parenting interventions that appear to influence success in engaging parents, increasing their use of effective parenting practices, and in promoting parents’ participation and retention in programs and services:

- tailoring interventions to meet the specific needs of families
- integrating and collaborating in services for families with multiple service needs
- creating opportunities for parents to receive support from peers to encourage engagement, reduce stigma and increase the sense of connection to other parents with similar circumstances
- addressing trauma, which affects a high percentage of individuals in some communities and can interfere with parenting and healthy child development and learning
- making programs culturally relevant to improve their effectiveness and participation across diverse families, and
- enhancing efforts to involve fathers, who are underrepresented in parenting research.

**Children show the best outcomes when the home learning environment and early childhood programs are both supportive of the child’s development and learning** (Melhuish, 2015). When families are engaged in their children’s education, children excel academically, socially, and behaviourally (Jeynes, 2012; Marti et al., 2018; National Academies of Sciences, Engineering, & Medicine, 2016). This is as true for preschool education as it is for primary and secondary education (Jeynes, 2021). Parents who place more importance on school readiness have been found to engage in more home-based involvement practices and have children with higher levels of academic achievement and socio-emotional competencies (Puccioni et al., 2019).

These findings highlight the need for early childhood services to engage parents as partners in providing the child’s early learning experiences, and to provide parents with help with home experiences that can promote children’s learning (Melhuish, 2015; Targowska et al., 2015). The first task is to reach out and find the families. In a Tasmanian study, Jose and



colleagues (2020) examined how outreach services facilitate family engagement with universal early childhood health and education services. Attending specialised services alongside parents, a strategy adopted by one service, was particularly effective for facilitating connection to services for vulnerable families. The capacity of services to offer outreach was constrained by a number of factors, including structured service systems, individual providers' skills and capability, resource limitations, and lack of clarity with respect to policies and procedures.

Interventions to support families with low household incomes to engage more with ECEC activities and promote their children's learning have been shown to result in greater school readiness (Barnett et al., 2020; Gennetian, 2019; Hajal et al., 2019; Moss et al., 2015; Nix et al., 2018; Prendergast & McPhee, 2018). One study (Gennetian, 2019) tested an intervention based on behavioural economics to support parent engagement. Strategies such as personalised invitations, child-friendly activity planners, text-message reminders, and commitment reinforcement, resulted in higher parent attendance and in parents spending more time with children on educational activities outside of the classroom. In another study, Barnett and colleagues (2020) explored the role that ECEC centres play in encouraging parents to engage in educational activities with their children both at the centres and at home, and whether greater parental engagement can help better prepare young children for school. They found that, when parents perceived that ECEC services did a good job of communicating with them and providing information about how their children are doing, the parents were more likely to engage in educational activities such as reading and singing with their children, both at the preschool centre and at home. The more parents engaged in educational activities at home, the better prepared their children were for school, in terms of language and early reading skills. The more involved parents were in preschool centre activities – such as volunteering in classrooms, attending meetings or supporting in excursion supervision – the more educational activities they did with their children at home. These results were strongest for families with low household incomes.

These and other interventions to promote parental engagement with early childhood education programs (e.g. Hajal et al., 2019; Nix et al., 2018; Phillips & Lowenstein, 2011; Prendergast & McPhee, 2018) all recognise that **school readiness is as much a family issue as it is an early childhood education issue**. However, the capacity of families to support their children' early learning can be compromised by a combination of their own limited personal resources and parenting skills, and their material circumstances. A UK study by Washbrook and Waldfogel (2011) of the school readiness of children from low-to-middle income families found that some of the gaps between these children and their better-off peers could be explained by aspects of the environments in which children are raised, including how they are parented, the health and well-being of their parents and the educational opportunities they enjoy in the home. The rest of the gap is explained by other environmental factors associated with income, parental education and other background factors such as mother's age at childbirth. Comparing these results with those in the United States, Waldfogel and Washbrook (2011) found that pre-school age children in both the United States and Britain show substantial income-related gaps in school readiness, driven in part by poorly developed parenting skills among overburdened, low-income families.

These findings suggest that it may not be sufficient to focus only on improving the parenting skills in disadvantaged families. This is the conclusion reached by a recent analysis by Goldfeld and colleagues (2021) of the socioeconomic disparities in children's reading skills that become apparent in Australian children by late childhood. They concluded that interventions that improve home reading and preschool attendance may contribute to reducing these disparities, but alone are unlikely to be sufficient to close the equity gap (Goldfeld et al., 2021). Improving the broader conditions under which families are raising young children is also needed.

## 6.3 Discussion

As noted at the outset, school readiness is not solely a matter of working directly with the child to ensure they are 'ready', but also involves ensuring that the school is ready for the child (understands the child's needs and has programs to address these), and that the family and the community are able to provide the child with the experiences and learning opportunities during the preschool years that will ensure that children arrive at school ready and able to take advantage of the social and learning opportunities that schools provide. This is important because school readiness is predictive of later school academic achievement. However, it does not determine future achievements; much depends upon the ongoing quality of schooling, especially in the early primary school years.



A major aim of the Play2Learn+ program is to ensure that children get two years of preschool education. As this review has shown, there is strong evidence that ECE programs can improve school readiness and contribute to subsequent educational achievements, provided they are of high quality. These benefits are long-lasting and wide-ranging, and accrue to the individuals themselves, as well as the wider society and government. Two years of high-quality preschool provides greater benefits than one, and starting earlier yields higher benefits. Children from disadvantaged backgrounds benefit most from attending high quality ECE programs, but gain nothing and may even be harmed by attending low quality programs. These children also benefit from attending schools with a range of other children rather than only other disadvantaged children.

Families differ in their ability to provide children with all the experiences and learning opportunities they need in the early years, which contributes to different levels of school readiness at school entry. Variations in school readiness show a clear socioeconomic gradient: the more disadvantaged children's backgrounds, the more likely they are to show vulnerabilities on the AEDC. This partly reflects the fact that children from disadvantaged backgrounds are less likely to access ECE programs and are also less likely to have access to high quality EC education. Successfully engaging families who are facing multiple challenges or are marginalised is critical if we are to improve outcomes for them and their children. There are a range of strategies that have been shown to be effective in helping families become more engaged in supporting their child's early learning and their regular attendance at ECE programs.



## 7. PLAY<sub>2</sub>LEARN+ PROGRAM THEORY OF CHANGE

This section analyses the theory of change underpinning the Play2Learn+ intervention, and considers the limits of what this program can achieve on its own.

### 7.1 What is the Play2Learn+ theory of change?

According to 54 reasons, the starting point for the Play2Learn+ theory of change is that children from low socioeconomic backgrounds are least likely to have engaged in early childhood education in the first 1000 days, are least likely to have engaged in pre-kindergarten programs, and are most likely to start school developmentally behind and to stay behind. Child development at school entry is predictive of long term educational and life outcomes.

To address this problem, the Play2Learn+ intervention targets children 3 to 4 years old from low socioeconomic backgrounds twelve months prior to kindergarten commencement. The target cohort is children and families experiencing social disadvantage who are disengaged from early childhood education services, with a child due to enter kindergarten in the following year. The overall aims of the intervention are:

- to promote improvements in the children's development and wellbeing
- to build the capacity and confidence of their carers to support the children's learning and development
- to ensure the families stay engaged with the EC programs as they transition from one program to the next.

#### Key components of Play2Learn+

**Assertive outreach.** The first task is to find and engage with families who are not making use of early childhood education services. To achieve this, one element of the Play2Learn + program is an assertive outreach service. Support will be offered to children and families through a combination of targeted goal-oriented group work, precision home visiting and virtual support, tailored to child and family needs.

**Play2Learn supported playgroups.** Parent Coaches and Child Development Specialists will support children and families to participate in a safe and supportive setting with like peers through the Play2Learn supported playgroups. This is intended to increase families' confidence and engagement with the universal pre-kindergarten *Launching into Learning* (LiL) program for 3 year olds, and with the universal 4-year-old kindergarten the following year.

**Support for transitions.** Transitions from playgroup to the LiL 3-year-old program, and from there to the universal 4-year-old kindergarten in the following year, will be facilitated through efforts to ensure that children are developmentally ready for more formal learning and by strengthening parent-school partnerships.

**One-to-one support for children and carers.** Throughout the program, staff will be providing one-to-one support for both carer and child to improve attachment and promote learning by: addressing barriers to educational engagement through parent coaching; and boosting child progress against developmental domains, including social competence and emotional maturity, through specialist child development interventions.

Interventions for carer and child will be underpinned by a Common Elements Approach, focusing on the following key elements: engagement; preparing for change; building relationships; promoting learning; supporting confidence; precision home visiting; warm referrals and brokerage for child-related external services; and resource kits: book packs and developmentally appropriate activities for children.



**Monitoring child development.** The Ages and Stages Questionnaire (ASQ) will be applied within the first 4 weeks of the program and then every 3 months over the service intervention to inform support provided to the children and enable evidence-based decision making.

**Monitoring supportive parenting.** The Parenting Interactions with Children: Checklist of Observations Linked to Outcomes (PICCOLO) tool will be administered within the first 4 weeks of the program and then every 3 months over the service intervention to inform support provided to parents and enable evidence-based decision making.

The key elements of the service model are shown in Figure 1:

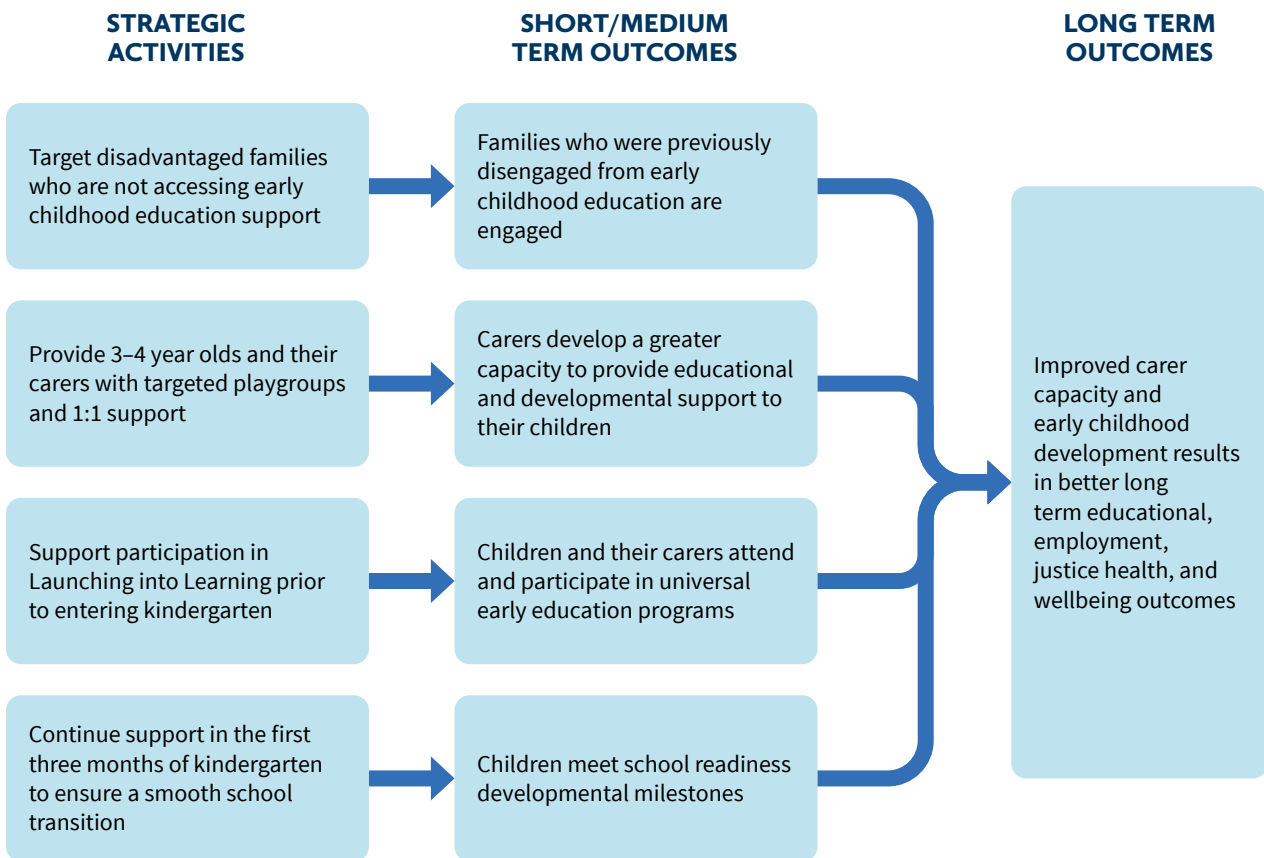


Figure 1: Key elements of the service model

The specific outcomes that are being sought are:

- Children who had not previously been engaged in early childhood education attend 3- and 4- year-old preschool programs on a regular basis.
- The children show improved performance on the Kindergarten Development Check (KDC), a standardised state-wide diagnostic tool assessing kindergarten students against 21 developmental markers across 3 areas (thinking and problem solving, literacy and numeracy, and health and wellbeing).



## 7.2 What is the evidence supporting this theory?

### Evidence for assertive outreach

Outreach services can be an effective way of increasing engagement with families who are not currently accessing the services and supports available to them (Boag-Munroe & Evangelou, 2012; Cortis et al., 2009; Jose et al., 2020; Wyndow et al., 2020). A recent study of the uses and effectiveness of outreach services in three different types of early childhood services in Tasmania (Jose et al., 2020) found that outreach was being used to increase engagement with all families presenting as vulnerable or for whom access and engagement with their service was limited or had decreased. This meant checking with families who stopped attending to see if they need help and reaching out to parents with particular anxieties. Another strategy was to attend appointments with parents. Families valued all forms of outreach activities, but the capacity of staff to connect families to other services by attending sessions or appointments with them was especially particularly valued. To build trust in families, outreach services need to let families set the pace for interaction, as well as being consistent, reliable, flexible, responsive and persistent.

### Evidence for Play2Learn supported playgroups

The Play2Learn playgroup model has not been formally assessed, but there is evidence that supported playgroups can provide benefits for families and their children experiencing vulnerabilities (Berthelson et al., 2012; Commerford & Robinson, 2016; Jackson, 2011; Pourliakis et al., 2015; Williams et al., 2015). Supported playgroups have largely been implemented in the absence of strong theoretical or empirical evidence about their effectiveness to promote positive outcomes for parents and children from vulnerable families (Berthelsen et al., 2012; Commerford & Robinson, 2016; Pourliakis et al., 2016; Williams et al., 2015). Nevertheless, there is evidence that they can provide valuable social support for parents, decreasing parents' social isolation, increasing their confidence and their use of formal support services (Jackson, 2011). In an analysis of a large data set of Australian children, Sincovich et al. (2020) found that children who attended playgroup had better development at school entry (as measured by the AEDC) relative to those who had not attended playgroup. These differences were observed across all five developmental domains and were universal to children from a range of backgrounds. Supported playgroups with the strongest evidence are those that include specific interventions – for example, to increase physical activity or to increase learning and cognitive development (Pourliakis et al., 2016).

Attendance rates at supported playgroups can be variable – 50% or less among programs that target high risk groups (Berthelsen et al., 2012). Some of the factors that cause irregular attendance are not amenable to change – parent work rosters, child illness and parent health issues. Other factors such as parental mental health (especially depression) can reduce attendance, and warrant extra training for facilitators in recognising the signs and referring on. Factors that contribute to better attendance rates are having facilitators who are good at engaging parents and able to provide child development knowledge to parents in non-didactic ways (Commerford & Robinson, 2016; Berthelsen et al., 2012; Williams et al., 2015). Higher attendance is associated with greater parent engagement with other parents (Berthelsen, 2012), which can help reduce social isolation in vulnerable families (Williams et al., 2015). Supported playgroups may also improve children's sociability and create new opportunities for them to learn (Commerford & Robinson, 2016).

Supported playgroups that target a particular group of parents and children when recruiting – for example, migrant communities, parents of children with a disability, parents who have difficulties with illicit drugs and alcohol, or parents who are at risk or vulnerable due to their socioeconomic status – appear to obtain a higher level of engagement and attendance from members in comparison to supported playgroups that are open to anyone to attend (Pourliakis et al., 2016).

A Practice Framework for Play2Learn playgroups developed recently (Moore & Myers, 2020) is now being used in all Play2Learn programs. This focuses on the way in which Play2Learn staff engage with and support individual families / caregivers and groups of families, and identifies the key principles that underpin this model of service.



## Evidence regarding preschool attendance

The evidence for the benefits of attending preschool are summarised in Section 6 of this report. This evidence indicates that attendance at high quality preschool programs improves school readiness, particularly for children from disadvantaged backgrounds, and that two years of preschool increases the benefits.

## Evidence regarding parent engagement and support for children's learning

The evidence regarding the importance of engaging parents in supporting their children's learning has also been reviewed in Section 6. Children do best when the home learning environments and ECE programs are both supportive of the child's development and learning. Successfully engaging families who are facing multiple challenges or are marginalised is critical if we are to improve outcomes for them and their children.

## Evidence regarding coaching

Parent coaching is a strategy for building parental capabilities and new skills (Rush & Shelden, 2010; Ziegler & Hadders-Algra, 2020). It uses a relationship-based strategy based on principles of family-centred practice, and is distinct from parent training approaches in which professionals instruct family members and demonstrate how to apply intervention strategies in a clear and strict way. Rush and Shelden (2020) summarise the evidence for the efficacy of this strategy and identify the five characteristics of successful coaching practices: observation, action, reflection, feedback, and joint planning. Ziegler and Hadders-Algra (2020) have also described the attitudes, beliefs, knowledge, and skills that professionals need to apply this approach effectively.

## Evidence for developmental monitoring

The tools that will be used for monitoring progress are reliable and effective.

The *Ages and Stages Questionnaire* (ASQ) has been chosen to monitor children's developmental progress and identify areas needing intervention. The ASQ provides reliable, accurate developmental and social-emotional screening for children across 5 areas (communication, gross motor, fine motor, problem solving, and personal-social), and has been specifically designed to pinpoint developmental progress and catch delays in young children.

The *Parenting Interactions with Children: Checklist of Observations Linked to Outcomes* (PICCOLO) tool has been chosen to monitor the quality of parent-child interactions, and to identify areas that need attention. The PICCOLO is a reliable tool that measures 29 developmentally supportive parenting behaviours in 4 domains (affection, responsiveness, encouragement, and teaching).

## 7.3 Possible limitations

There are two main potential limitations on the capacity of the Play2Learn+ program to achieve its intended outcomes.

The first potential limitation concerns the capacity of the program to address the major psychosocial factors that can compromise parental and family functioning. The Play2Learn+ intervention has been designed as a stand-alone service and is not part of a wider network of services. This approach may have been taken in order to be able to attribute the outcomes to the Play2Learn+ intervention itself, and to limit other factors that might have contributed. However, it is inevitable that the families who are involved in the program will be facing challenges other than their children's early education. If they are not provided with support to address these challenges, then parental and/or family functioning are likely to be compromised, thereby reducing the efficacy of the Play2Learn+ intervention.

While making referrals to other services to help families address challenges is part of the proposed model of practice for 54 reasons Parent Coaches and Child Development Specialists, evidence indicates that, to improve long-term outcomes for children experiencing significant disadvantage, a multilevel, ecological approach to early intervention is required





(Moore, 2021; Moore & McDonald, 2013; NASEM, 2019; Pillas et al., 2014). Many different factors affect child development and family functioning, and no single form of intervention can make a sustained difference (Moore & McDonald, 2013; Prevention Institute, 2019). Programs alone are not sufficient to change outcomes for the most disadvantaged children and families because they generally do not alter the community factors that impact upon children and families (for example, community support), cannot alter structural and wider social factors, and have shown to be less effective amongst children and families experiencing high levels of stress (Moore, 2021; Moore & McDonald, 2013).

Integrating services and supports across different sectors is essential to ensuring that families facing multiple adversities have positive social networks and have access to key services during their children's early years (Black & Dewey, 2014; Black et al., 2016; Charles et al., 2021; NASEM, 2019; WHO, UNICEF & World Bank, 2016, 2018). Place-based collective impact initiatives can be a powerful way of coordinating efforts to support families and communities experiencing many challenges. These initiatives seek to address the collective problems of families and communities at a local level through sustained partnerships between a wide range of stakeholders, including state and federal government departments and services, non-government agencies, community-based support programs, local businesses and service clubs, community members and families themselves (Centre for Community Child Health, 2018; Fry et al., 2014; Moore, 2014; Moore & Fry, 2011; Moore et al., 2014).

A second limitation concerns the point at which the intervention starts. As shown by the evidence regarding child development summarised in Section 5, the most critical period of development is during the first 1000 days. There is a strong case for starting earlier than 3 years to provide support for early parenting and family functioning. The challenge of finding and engaging with parents for the Play2Learn+ intervention would be much easier if the parents had been involved in appropriate parent support programs since before the children were born. And the gap between their children and those from more well-resourced families would be less if the children had been involved in high-quality childcare services before they reached 3 years of age.

Although the greatest benefits are likely to come from support that begins in the very early years, providing high quality ECEC combined with parental support has been shown to be of value whatever age it starts. Children who have missed out on earlier interventions will still benefit from the Play2Learn+ program, and those who attend the Lil program as well as 4 year old kindergarten program will benefit more than those who only attend the latter. This is especially true for children from disadvantaged backgrounds.

## 7.4 Discussion

There is good evidence for the key elements of the Play2Learn+ program's theory of change – assertive outreach, supported playgroups, preschool attendance, engaging with parents, and the use of coaching and developmental monitoring. Providing these are all delivered in ways that are consistent with best practice and are of high quality, then it is likely that the intervention will succeed in achieving its aims and that there will be positive benefits for the children and families involved. However, it is not enough to assume that the various services will be delivered as intended: there needs to be ways of monitoring all these key program elements to ensure that they are delivered in ways that are acceptable to parents and that build parental capabilities. There also needs to be support and relevant training for staff who are working directly with the children and families.

The extent to which the program can fully achieve its intended outcomes is limited by two key factors. One is that child outcomes are strongly shaped by the social and material conditions under which families are raising their children, and the Play2Learn+ program does not directly address these conditions. While Play2Learn+ can arrange referrals to other services that can help parents address the challenges they face, there is no guarantee that these services will be available in a timely fashion, or that they will be able to help the family resolve or manage the issues satisfactorily. The ideal would be for Play2Learn+ to be part of an integrated service network providing holistic support to families.

The second limitation concerns the age at which the intervention starts. There is a strong case for starting earlier than 3 years to provide support for early parenting and family functioning. For maximum effect, Play2Learn+ needs to be part of an integrated suite of child and family support services beginning in pregnancy. However, as noted already, while the benefits reduce with age, intervention at any point in the early years has been shown to have positive outcomes for children.



## 8. COST BENEFITS TO GOVERNMENT

This section reviews the evidence regarding the cost benefits to government – what economic benefits can be expected, what future costs will be avoided, and what is the cost of not investing in early childhood programs.

### 8.1 Economic benefits of investments in early years services

Do investments in promoting development in the early years have economic benefits for the country as a whole? The Australian Research Alliance for Children and Youth (ARACY) believes so. ARACY has developed The Nest, an action agenda that focuses on improving the wellbeing of children and youth aged 0-24 years (ARACY, 2014). Wellbeing includes education performance, physical wellbeing, social and emotional wellbeing and young people participating in issues affecting them. ARACY believes that efforts to improve children and young people's wellbeing can have economic benefits: reducing Australia's child vulnerability from 22 to 15 per cent, as proposed by ARACY, would lead to an increase in Australian gross domestic product (GDP) of 7.35 per cent over 60 years.

#### What is the evidence to support these estimates?

**Investments in the early years services are cost effective overall, reduce demand on later services, and promote health and wellbeing in adulthood** (Algan et al., 2021; Campbell et al., 2014; Fox et al., 2015; Garcia & Heckman, 2020; Garcia et al., 2019; Lynch, 2004, 2005; NASEM, 2019a; Pascoe & Brennan, 2017; Shonkoff & Richter, 2013; Stevens, 2017). Getting it right in the early years reduces downstream expenditure on remedial education, school failure, poor health, mental illness, welfare reciprocity, substance misuse and criminal justice. Expenditure on evidence-based prevention initiatives can reduce incidence and prevalence at a population-level (Fox et al., 2015).

**The economic returns of investments in the early years are higher than those in later years** (Cunha & Heckman, 2006, 2009; Cunha et al., 2006; Karoly, 2016; Karoly et al., 2005; Heckman & Mosso, 2014; Teager et al., 2019). Although it is possible to shape the development and wellbeing of children and young people when they are older, it becomes progressively harder and more costly to do so (Fox et al., 2015; Heckman & Mosso, 2014). It is most cost effective to invest in early intervention that resolves issues as they emerge and are malleable, rather than responding to crisis, stress and trauma, which is both more challenging and more expensive to resolve (Fox et al., 2015).

**The benefits can be life-long and have intergenerational ripple effects.** This has been demonstrated in a recent study by Garcia and colleagues (2021) of the Perry Preschool Project, the longest follow-up of any experimentally evaluated early childhood education program. Participants have been followed into late midlife, and their children into adulthood. As well as substantial benefits for the original participants, there have been benefits for their siblings and for their children. The program improves health and healthy behaviours, increases labour income, and reduces crime and the cost to the criminal justice system. The ratio of program benefits to the total program cost is 9:1, a much higher rate of return than other social service investments, such as those that focus on adult training.

**The initial investment costs are significant, but the eventual payoff is much more substantial** (The Front Project, 2019; Lee et al., Lynch, 2004, 2005; Pascoe & Brennan, 2017). Some of these benefits only become apparent as children enter adolescence and adulthood, but the benefits are significant – and they persist and grow in successive generations (Garcia et al., 2021).



In an analysis prepared for the European Commission, Algan et al. (2021) summarise the social and economic benefits of investments in education (including high-quality preschool education for disadvantaged children) thus:

Education fosters economic growth and social cohesion. It plays a critical role in individual and societal prosperity, and is essential for personal development and welfare. Investment in education provides substantial long-term gains for individuals, public finances and the knowledge-based economy as a whole. Looking at all the different policies in the past half-century, investment in education, along with health policy, is associated with the highest rate of return. According to different micro and macro estimates, the rate of return on investing in human capital is significant, especially when compared to alternative investment opportunities. Overall, education boosts labour productivity and gives impetus to the innovation required to move the economy. It increases the potential for retraining and career development, as well as opportunities for the workforce to adapt to changes in the workplace as a result of technological developments and/or changes in the essential characteristics of the professions. Since there is a strong relationship between education and earnings, higher levels of education also benefit public finances.

The benefits are both national and individual. At the national level, the evidence shows that European countries that have better education systems, both in terms of quantity and quality, recover faster from economic shocks and have better economic resilience. At the individual level, well-designed and well-targeted investments in education lead to better skills, better employability, increased productivity and higher earnings. Individuals who are more educated are more flexible and adaptable to new technological advances. Among the non-economic benefits associated with education are better health, lower crime rates and higher levels of trust, tolerance, and civic and political engagement (Algan et al., 2021).

## 8.2 Cost-benefit analyses of preschool programs

**Overall, the evidence indicates that, regardless of background, the benefits of quality preschools outweigh costs.**

This is true of Australian studies (Centre for Policy Development, 2021; Manning et al., 2016; Grudnoff, 2022; Pascoe & Brennan, 2017; PwC Australia, 2014; The Front Project / PwC, 2019), as well as international analyses (Dickens & Baschnagel, 2009; Karoly, 2011, 2016, 2017; Novoa & Hamm, 2017; Pascoe & Brennan, 2017; RAND Corporation, 2009; Treffler, 2009; Veerapandiyan et al., 2018; and Yoshikawa et al., 2013).

### Australian studies

Two Australian analyses have looked at the cost benefits of providing a year of preschool in the year before school (PwC, 2014; The Front Project / PwC, 2019). In the first of these, PwC (2014) modelled the economic benefits of providing a year of preschool for all children, focusing on three impacts on the Australian economy: impacts of an increase in female labour force participation; productivity impacts of participation in quality ECEC; and impacts of increasing vulnerable children's participation in ECEC. There would be upfront costs to government in providing more ECEC services, in the form of increased childcare utilisation by currently nonworking mothers, marginal costs of increasing quality through regulatory activity, and increased access to ECEC by the vulnerable or disadvantaged, who are currently not accessing any form of childcare. However, these would be offset in time by a number of financial benefits, including:

- changes to taxes collected from an expanding ECEC sector and the additional participation and productivity impacts<sup>5</sup>
- a reduction in expenditure on unemployment and other government transfers for parents and children once they enter the labour market
- a decrease in expenditure associated with remedial education, justice and health services as a result of improved education and life outcomes for vulnerable children.

<sup>5</sup> Analyses of the economic benefits to the National Disability Insurance Scheme (NDIS) by the Productivity Commission (2011) and Per Capita (D'Rosario & Lloyd-Capes, 2021) note that the cost to government of providing the NDIS service does not mean a cost to the economy, since the benefits outweigh the costs. One of the benefits is that increasing the provision of early childhood programs creates more jobs for early childhood workers, with flow-on benefits for the economy.



Overall, PwC estimated that, by 2050, the cumulative benefits to GDP would be as follows:

- benefits of increased female workforce participation – \$6 billion
- benefits of children receiving high-quality ECEC – \$10.3 billion, and
- benefits of increased participation from vulnerable children – \$13.3 billion.

A subsequent analysis commissioned by The Front Project (PwC, 2019) looked at the impact of the current Australian early childhood education system (which provides an early education program for 15 hours a week, delivered by a Bachelor qualified teacher, in the year before school). Using 2017 as the reference year, PwC found that the costs associated with the provision of 15 hours of early childhood education in the year-before-school would amount to \$2.34 billion. These costs are split between government (79 per cent) and parents or carers (21 per cent). This was offset by an estimated \$4.74 billion in benefits. Some of these benefits would be realised in the short-term, including the additional income and higher taxes paid by parents or carers who choose to work more because early childhood education is available (\$1.46 billion and \$313 million respectively). Other benefits will be realised over a much longer period. The cognitive benefits for children who receive a quality early childhood education can be linked to \$1.06 billion in higher earnings over a lifetime and a further \$495 million in higher taxes paid to government.

Overall, the analysis found that this system offers a significant return on investment of 1:2, meaning that, for every dollar invested, Australia receives \$2 back over a child's life. Children, families, governments and business all benefit from the returns early education provides. Benefits are reflected in higher earnings and workforce participation, increased tax revenue and considerable savings in health, education and justice budgets. This return on investment can be attributed to the skills and abilities children develop in early education. These abilities lead to stronger academic performance through school and a greater likelihood of school completion and undertaking further education. School completion and participation in further education are key predictors for higher future incomes and better wellbeing.

In another Australian analysis of the economic benefits of providing universal ECEC services, Grudnoff (2022) notes that Australia's investment in ECEC services is lower than the average of other industrial countries – and dramatically lower than the Nordic countries (which have very strong public ECEC systems). He estimates the economic benefits that would accrue if Australia matched the Nordic countries level of investment, and identifies three income streams:

- Economic benefits of increased labour force participation for women, including increased employment, output, incomes and tax revenues for government
- The enhanced capacity of women to work full-time hours (rather than being constrained by the unavailability of childcare and unequal division of unpaid labour to working only part-time).
- The expansion of ECEC services would also create potentially hundreds of thousands of new jobs in the childcare industry itself and related indirect activities.

The combined economic benefits of these three streams are shown in Table 3.

**Table 3: Combined macroeconomic and fiscal benefits of Nordic-Style universal ECEC. (Grundoff, 2022)**

	Impact on GDP (\$ billion)	Impact on government revenue (\$ billion)
Increased female labour force participation	\$64.0	\$18.4
Increased incidence of female full-time work	\$68.2	\$19.6
Direct and indirect jobs in ECEC provision	\$35.6	\$10.2
<b>TOTAL</b>	<b>\$167.8</b>	<b>\$48.2</b>

Based on this analysis, Grudnoff argues that government revenues would rise by more than enough to pay for a universal, affordable non-profit ECEC system in the first place. Thus, high-quality ECEC is a public service that pays for itself.



Other Australian cost-benefit studies have looked at early childhood intervention programs (Manning et al., 2006) and community playgroups (Daly et al., 2019). A cost-benefit analysis of a multifaceted Australian early intervention program (Manning et al., 2006) found that the cost of the program could more than offset the cost of later remedial programs. Benefits have also been found for investments in community playgroups. A cost benefit analysis of Australian community playgroups (Daly et al., 2019) found that community playgroups deliver substantial long-term economic benefits and that those benefits exceed its costs. The estimated benefit of \$3.60 is returned for every dollar of cost. Comparatively this is a very high ratio of benefit to cost and shows that the Community Playgroups represent a highly effective use of Government resources.

The most comprehensive attempt to analysis of the cost benefits of early childhood services in Australia has been conducted by the Centre for Policy Development (2021). This is based on the evidence of what children need to thrive, what forms of support have the greatest impact, and what will work best for Australian children and families. The report calls for a new nationwide guarantee for young children and families that combines universal services to help all children thrive, with bespoke support to meet families' needs and aspirations. The guarantee has a number of elements, including; more paid parental leave; universal access to maternal and child health care; up to 30 hours of free or low-cost high-quality ECEC per week as soon as families want it; up to 30 hours of free or low-cost high-quality preschool per week for the two years before children start school; a wraparound "navigator" service for families who need extra help to find and access suitable supports; and developing better mechanisms to provide seamless support for children from the day they are born. The Centre for Policy Development estimates that an additional \$1 to \$2 billion annual investment is needed in the first 12 months of implementing this guarantee, rising to between \$11 and \$20 billion annually once the guarantee is fully realised in 2030. The breakdown for the individual elements of the guarantee include the ECEC services and preschool. It is estimated that, to provide three days (up to 30 hours) of free or low-cost high-quality early childhood education and care per week, plus three days (up to 30 hours) of free or low-cost high-quality preschool per week for the two years before children start school, would cost \$7.2 – \$11.5 billion (with costs to be shared between Commonwealth and State and Territory jurisdictions).

The economic benefits of the guarantee would be substantial, and include additional economic growth, tax revenue and reduced government spending on welfare, health and the justice system. It is estimated that the costs and benefits of the guarantee will break even when fully rolled out in 2030, and benefits would continue to accrue from then on. By 2045, all benefits of the guarantee will be realised as children who attend high-quality ECD services move into the workforce, leading to an estimated yearly return on investment of \$15 billion.

## International studies

General reviews of the cost-benefits of early childhood services have been reported by Dalziel et al. (2015), Dickens and Baschnagel (2009), Karoly (2011, 2016, 2017), Novoa & Hamm (2017), Pascoe & Brennan (2017), RAND Corporation (2009), Trefler (2009), Veerapandiyani et al. (2018) and Yoshikawa et al. (2013). The overall consensus is that investments in ECEC programs can generate government savings that more than repay their costs over time, with returns on investment ranging from 1:2 to 1:7. Specific studies are as follows:

- According to an economic analysis by the RAND Corporation (2009), there is a growing body of evaluations that shows that early childhood programs can generate government savings that more than repay their costs and produce returns to society that outpace most public and private investments.
- A review by Yoshikawa and colleagues (2013) concluded that available benefit-cost estimates based on older, intensive interventions, as well as contemporary, large-scale public preschool programs, range from three to seven dollars saved for every dollar spent.
- A review by Pascoe & Brennan (2017) concluded that, although calculations of costs and benefits vary, economic analyses consistently highlight that investment in early learning has significant net benefits that accrue to the individual, society and governments. These returns span multiple domains, including productivity gains, health benefits and reduced costs associated with crime. (In an Australian context, fiscal benefits flow to both Commonwealth and state and territory governments.) Estimates of the benefit-cost ratio (BCR) of such investment are as high as 17 dollars for each dollar initially spent based on analysis of the landmark Perry Preschool Program targeted



at highly disadvantaged children. More modest estimates place this ratio as \$2 to \$4 for every dollar invested in universal preschool – a ratio considered to be more realistic in the contemporary context. Returns in this lower range still provide ample justification for public investment.

- A review by Karoly (2016) notes that most predictive studies of preschool education's long-term economic benefits rely on benefit-cost analyses of intensive small-scale programs that were implemented decades ago, when a far smaller proportion of children attended preschool at all, and that followed their subjects well into adult life. Although analyses of those programs suggest returns from preschool as high as \$17 for every dollar invested, Karoly concludes that in today's context, it may be more realistic to expect returns in the range of \$3 to \$4.
- A cost-benefit analysis of the impact of early childhood developmental intervention programs by Veerapandiyan et al. (2018) used IQ increases as a proxy for subsequent economic gains resulting from such programs. They found that preschool interventions (for 3 and 4 year olds) produce a mean increase of intelligence quotient of approximately 8 points, and a higher intelligence quotient is associated with a higher later percent per capita Gross National Product. Projections of revenue resulting from direct benefits of preschool interventions versus initial costs revealed a breakeven point for recuperating costs of ECDI at the age of 24 years (range: 22-33 years) with a benefit-cost ratio of 4.19 (2.08-6.24).
- Dickens and Baschnagel (2009) review how investing in preschool programs would affect the economy and government budgets. Direct economic benefits include an increase in parental labour supply as their time is freed up by their child's participation in the program, increase educational attainments in the children, with subsequent benefits for productivity in adult employment. They calculate the effects of the two of the well-known US intervention programs, and show that both programs eventually yield significant benefits for national GDP, although the time span is long.
- An analysis by the Centre for American Progress (Novoa & Hamm, 2017) quantifies long-term economic outcomes in states that have high-quality preschool, and concludes the United States would expect to see a net benefit of more than \$83.3 billion for each one-year cohort of 4-year-olds.
- Lee and colleagues (2012) examined the cost benefits of early childhood education programs for the US state of Washington. They estimated that, in the long-term, society will receive a return of \$3.60 for each dollar invested, a return on investment of 7 per cent. Even when key parameters in the cost-benefit model were varied, benefits from early childhood education are expected to outweigh the costs 100 per cent of the time. The primary source of benefits was from labour-market earnings, with over half of the total expected benefits accrued due to increased earnings because of better high school graduation or test scores. Program costs exceed cumulative benefits for the first several years, but by the 14th year from the initial investment, the total benefits to participants, taxpayers and others exceed the amount of the investment in the programme. Benefits that accrue immediately include avoided child abuse and neglect, as well as avoided grade retention and special education. Benefits from avoided crime begin as early as five years after the investment. After 15 years, labour market benefits begin accruing to participants and taxpayers, as a result of increased educational achievement.

Other analyses have calculated the likely benefits of making preschool services universally available (Lynch & Vaghul, 2015; Trefler, 2009):

- Lynch and Vaghul (2015) analysed what would be the likely costs and benefits if high-quality universal preschool education programs were made available to all 3- and 4-year-old children across the United States. The governmental costs and benefits of a publicly funded prekindergarten program—measured as year-by-year expenditures, budget savings, and revenue impacts—are estimated from program implementation in 2016 through 2050. In addition to the long-term budgetary consequences to governments, the earnings, health, and crime implications for individuals and society are calculated for these same years. They calculate that a universal preschool program serving all 3- and 4-year-old children would generate annual benefits that would surpass the annual costs of the program within eight years. In the year 2050, the annual budgetary, earnings, health, and crime benefits would total \$304.7 billion: \$81.6 billion in government budget benefits, \$108.4 billion in increased compensation of workers, and \$114.7 billion in reduced costs to individuals from better health and less crime and child abuse. These annual benefits would exceed the costs of the program in 2050 by a ratio of 8.9 to 1.



- A cost-benefit analysis of high-quality early child development initiatives by Trefler (2009) found that the returns on investment for such initiatives establishes that they all but pay for themselves. This is both because early childhood interventions enhance adult employability and earnings of program participants, and because the interventions reduce the need for expensive remedial programs such as special education and medical treatment. Taking a particular Canadian proposal (for a \$15 billion dollar investment in early childhood), Trefler calculates that the combination of increased revenue and decreased expenditure would yield returns of \$13.1 billion.
- Dalziel and colleagues (2015) conducted a systematic review of all cost-benefit studies of centre-based programs enrolling disadvantaged children prior to age 5 compared with a matched group. They found 13 economic evaluations relating to six distinct programs that met the inclusion criteria. Of the six programs, half were reported as producing a substantial net benefit (benefits considerably greater than cost) representing a good investment, while for the other half, costs were greater than benefits. However, as Karoly (2011, 2016) has pointed out, some of these variations may represent the methodological limitations of the existing research on benefit-cost analyses of early childhood programs, and she proposes a set of standards for conducting such analyses. In a later report, Karoly (2016) summarises the range of estimates from various benefit-cost analyses and some of the methodological differences that can account for the differences among them. Karoly et al. (2021) have developed a cost model that can be used by policymakers as they strive to continue making high-quality pre-K programs accessible for all families.

Cost-benefit analyses of specific preschool programs have been conducted by Gertler et al. (2021), Temple and Reynolds (2007), and Reynolds et al. (2011):

- Temple and Reynolds (2007) analysed the cost-benefits on the Child-Parent Centre Program, a large-scale US preschool program for economically disadvantaged children. They estimate that the benefit-cost ratio ranges from \$5.98 to \$10.15 per dollar invested. They find strong evidence that the consistently positive economic returns of high-quality preschool programs exceed most other educational interventions, especially those that begin during the school-age years such as reduced class sizes in the elementary grades, grade retention, and youth job training.
- In another analysis of this program, Reynolds and colleagues (2011) used data collected up to age 26 on health and wellbeing, and found that the preschool program provided a total return to society of \$10.83 per dollar invested (net benefits per participant of \$83,708). Benefits to the public (other than program participants and families) were \$7.20 per dollar invested. The primary sources of benefits were increased earnings and tax revenues, averted criminal justice system and victim costs, and savings for child welfare, special education, and grade retention.
- Almost all interventions that have been followed longitudinally or subjected to cost-benefit analyses have been conducted in high-income countries. An exception is the Jamaica Early Childhood Stimulation intervention. This was a small-sample randomized early childhood education stimulation intervention targeting stunted children living in the poor neighbourhoods of Kingston, Jamaica. Implemented in 1987-1989, treatment consisted of a two-year home-based intervention designed to improve nutrition and the quality of mother-child interactions to foster cognitive, language and psycho-social skills. This cohort has been followed into adulthood. Gertler and colleagues (2021) report the labour market effects on participants at age 31. They found large and statistically significant effects on income and schooling; the treatment group had 43% higher hourly wages and 37% higher earnings than the control group. This is a substantial increase over the treatment effect estimated for age 22 when a 25% increase in earnings was observed.
- A Canadian study (Centre for Spatial Economics, 2009) looked at the economics of early learning and childcare, analysed a number of other social and economic impacts of childcare and estimated the level and impact of workforce shortages of childcare workers. The study showed that investing in childcare provides the greatest economic benefit of any sector of the Canadian economy. It is the biggest job creator: investing \$1 million in childcare would create 40 jobs, which is at least 43% more jobs than the next highest industry and four times the number of jobs generated by \$1 million in construction spending. It provides strong economic stimulus: every dollar invested in childcare increases the economy's output (GDP) by \$2.30. This is one of the highest GDP impacts of all major sectors. In addition, the study found that childcare investments more than pay for themselves in terms of benefits for society, with a \$2.54 payback for every dollar invested in Canada. Each dollar invested would also generate an estimated 90 cents back in revenue for federal and provincial governments. This means that even from a narrow fiscal perspective of governments, investments in childcare can virtually pay for themselves.



International studies show that **the benefits of quality early childhood programs can be even larger for the most severely disadvantaged children** (Algan et al., 2021; Heckman et al., 2006; Heckman and Masterov, 2007; Karoly, 2017; Pascoe & Brennan, 2017). According to Heckman et al. (2006), cost-benefit analyses of preschool education programs demonstrate that the highest per child benefits stem from programs that focus on economically disadvantaged children. Studies have shown that these children make significant gains in cognition, social-emotional development, and educational performance when they participate in high-quality early education programs relative to children who do not participate. The economic benefits of these gains include increased earnings of the participants and public savings due to reduced crime and reduced need for rehabilitation and treatment. Cost-benefit analysis also shows that these benefits are higher than those from public investments like sports stadiums or office towers.

Another reason why it is important to provide effective help in the early years for severely disadvantaged children is that they are highly likely to end up as adults who, although small in numbers, account for a disproportionately large cumulative economic burden (Belsky, 2020; Caspi et al., 2016). An analysis of data from the longitudinal Dunedin birth cohort study in New Zealand by Caspi et al. (2016) found that a small segment of the population had disproportionately large health and welfare problems in later life: a segment comprising 22% of the cohort accounted for 36% of the cohort's injury insurance claims; 40% of excess obese kilograms; 54% of cigarettes smoked; 57% of hospital nights; 66% of welfare benefits; 77% of fatherless child-rearing; 78% of prescription fills; and 81% of criminal convictions. Childhood risks, including poor brain health at three years of age, predicted this segment with large effect sizes. Early-years interventions that are effective for this population segment could yield very large returns on investment.

Karoly (2017) and Pascoe and Brennan (2017) agree that per-child economic returns are likely to be higher for economically disadvantaged children, but argue that total benefits to society can be larger for universal programs that benefit all children compared with targeted ones. Although the net present value benefits per child tend to be larger for children at greater risk of poor education outcomes, when benefits are aggregated across all children served, the aggregate net present value to society can be larger for universal programs compared with targeted ones.

## 8.3 Cost-benefit analyses of other early years interventions

**Efforts to improve the sensitivity of early parenting can also have long-term cost savings.** There is substantial evidence that higher quality early parental caregiving is associated with improved child behavioural, cognitive and physical development, both in the short term and over the longer term (e.g. Bachmann et al., 2021; Duncan et al., 2017; Hajizadeh et al., 2017; O'Neill, 2013).

- In a longitudinal study, Bachmann et al. (2021) explored whether there were any later cost savings associated with sensitive parenting in the early years. They found that sensitive parenting of children when they were 4-6 years was associated with lower costs when the children reached early adolescence. The costs were spread across personal family expenditure and education, health, social and justice services, and included health, social care, extra school support, out-of-home placements and family-born expenditure. These effects were independent of poverty, child and youth antisocial behaviour levels and IQ. Savings are likely to increase as individuals grow older since early parenting quality predicts health, behavioural and occupational outcomes in adulthood.
- Duncan, McGillivray and Renfrew (2017) conducted a systematic review of economic evaluations of universal preventative or targeted treatment parenting interventions that aimed to enhance parent-infant interaction. On the basis of the available studies, they calculated that parenting interventions could save the UK health service around £2.5k per family over 25 years and could save the UK criminal justice system over £145k per person over the life course.
- Hajizadeh and colleagues (2017) determined the cost-effectiveness of a program that provided family-centred enhancement to pre-kindergarten programming in early education centres for high-poverty families. This program was estimated to save \$4387 per individual and increase each individual's quality adjusted life expectancy by 0.27 QALYs. These benefits were primarily due to the impact on childhood obesity and the subsequent predicted prevention of diabetes, and on childhood behaviour problems and the subsequent predicted prevention of interaction with the judiciary system and unemployment.





- O'Neill (2013) reports a randomised evaluation of an early intervention parenting program – the Incredible Years program – aimed at improving the skills and parenting strategies of parents, particularly those who find their child's behaviour difficult or challenging. The evaluation shows that the treatment significantly reduced behavioural problems in young children when measured 6 months after the intervention. Furthermore this cost analysis, combined with a consideration of the potential long-run benefits associated with the programme, suggest that the long-run rate of return to society from this programme is likely to be relatively high. Benefits are reduced behavioural problems and potentially reductions in reducing long-term inequalities.

## 8.4 Evidence regarding avoided future costs

Studies of the cost benefits of investments in early childhood often identify costs that governments save as well as additional revenue that the ECEC programs and other interventions might produce (e.g. The Front Project, 2019; Hajizadeh et al., 2017; Heckman et al., 2006; Lynch & Vaghul, 2015; RAND Corporation, 2009).

An economic analysis by the RAND Corporation (2009) lists a range of child outcomes and the associated monetary savings (or costs) to government summarised in Table 4:

**Table 4: Monetary savings (or costs) from affected child outcomes**

Effect on child outcome	Monetary savings (or costs) to government
Reduced child maltreatment	Lower costs to child welfare system
Reduced child accidents and injuries	Lower costs for emergency room visits and other public health care costs
Reduced incidence of teen childbearing	Lower costs for public health care system and social welfare programs
Reduced grade repetition	Fewer years spent in K–12 education
Reduced use of special education	Lower costs for special education
Increased high school graduation rate	(More years spent in K–12 education, i.e., drop-out rate reduced)
Increased college attendance rate	(More years spent in postsecondary education)
Increased labor force participation and earnings in adulthood	Increased tax revenue
Reduced use of welfare and other means-tested programs	Reduced administrative costs for social welfare programs; reduced welfare program transfer payments
Reduced crime and contact with criminal justice system	Lower costs for the criminal justice system
Reduced incidence of smoking and substance abuse	Lower costs for public health care system and from premature death
Improved pregnancy outcomes	Lower medical costs from fewer low birth weight babies

According to Heckman et al. (2006), cost-benefit analyses of preschool education programs show that the economic benefits of these gains include public savings due to reduced crime and reduced need for rehabilitation and treatment. An analysis of the benefits of high-quality preschool education by Lynch and Vaghul (2015) concluded that such programs improve government budgets by saving spending on education, child welfare, the criminal justice system, and public health care. Similarly, the economic analysis conducted by PwC for The Front Project (2019) looked at the impact of the current Australian early childhood education system Australian system. They found that, besides the economic and other benefits yielded, there were considerable savings in health, education and justice budgets.



## Cost of not intervening early

As Richter and colleagues (2021) have noted, one corollary of lifelong benefits of investments in the early years is that inadequate investments incur significant future costs. An Australian analysis, conducted by Teager and colleagues (2019), calculated the cost of late intervention, replicating the method and approach in the United Kingdom by the Early Intervention Foundation (EIF, 2015, 2016 & 2018). They calculated the annual expenditure on the acute, statutory and essential benefits and services provided by Australian governments that become necessary once children or young people are experiencing serious issues. This included spending by Commonwealth and state and territory governments across multiple issues and portfolios, including health, justice, human services and welfare. This study estimates that the cost to government of late intervention in Australia is \$15.2 billion each year. This equates to \$607 for every Australian, or \$1,912 per child and young person. The breakdown per issue is shown in Figure 1.

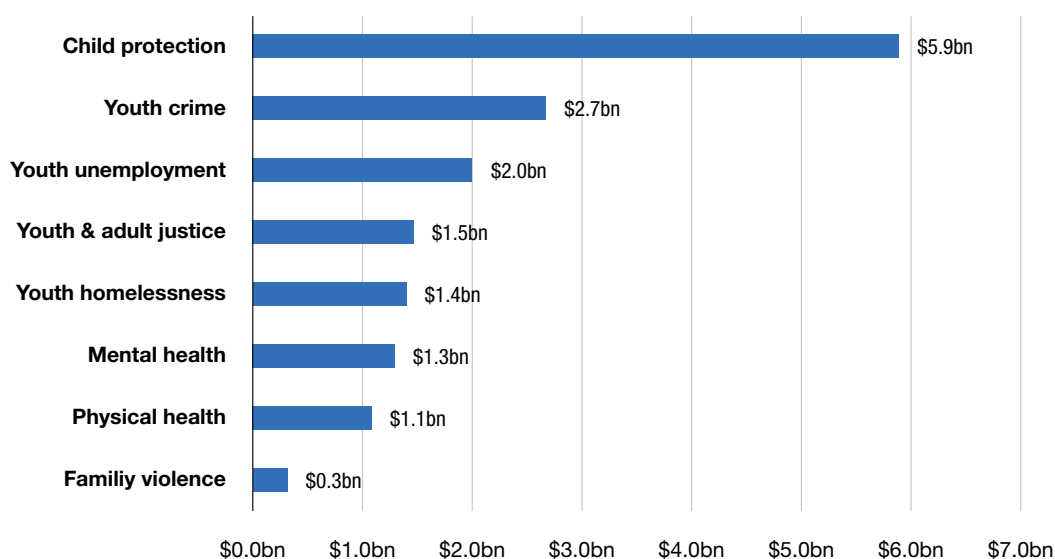


Figure 2: Annual cost of late intervention in Australia by issue (2018-19 prices, \$ billion). (Teager et al., 2019).

The report uses publicly available Australian data to calculate annual government expenditure on late intervention services for children and young people aged 0-24. It provides a conservative estimate because:

- costs are only included where reliable and robust data sources are available
- only direct spending by government is included, not the wider social and economic costs of the issues experienced by children and young people
- only the costs incurred during childhood and adolescence are shown, with no modelling of the lifetime costs associated with many of the issues highlighted
- where assumptions have been made, they have been in the lower boundary to avoid overestimation.

One of the benefits associated with attending high quality early childhood programs is an increased likelihood of completing school. Not completing school has both fiscal costs for governments and social costs for the individuals concerned. In an Australian analysis, Lamb and Huo (2017) calculated the fiscal and social costs<sup>6</sup> associated with both early school leaving and not being actively engaged in work and study in the post-school years. Based on 2014 data, early school leavers cost the Australian government approximately \$315.3 million each year. Since early school leavers are likely to remain disengaged from further education, the average lifetime fiscal cost to Australian governments is estimated to be \$334,600 for each early leaver, or a total of \$12.6 billion for all the early school leavers.

<sup>6</sup> Fiscal costs refer to costs that governments incur, through reduced tax revenue or increased expenditure on services. Social costs refer to costs to the individual and the community, such as loss of personal income and the burden of higher taxes to pay for additional services.



In addition to these fiscal costs, there are large social costs associated with leaving school early. For each student who does not complete Year 12 or equivalent, compared to a student who does, the social impact is \$616,200 over the adult years (25-64), or an annual cost per early leaver of \$15,400. Most of this impact is attributable to lower earnings of early leavers across their working life, but there are also substantial economic impacts in terms of crime and marginal tax burden. Aggregated across a cohort of students aged 19 in any given year, the early school leavers in Australia contribute to a social loss of \$23.2 billion, in addition to the fiscal loss (Lamb & Huo, 2017).

Another consequence of not investing in early childhood programs is that the costs of more intensive forms of treatment and care that may be needed later escalate dramatically if the far cheaper early intervention programs are not provided or are ineffective. This is illustrated in Figure 3 based on UK data.

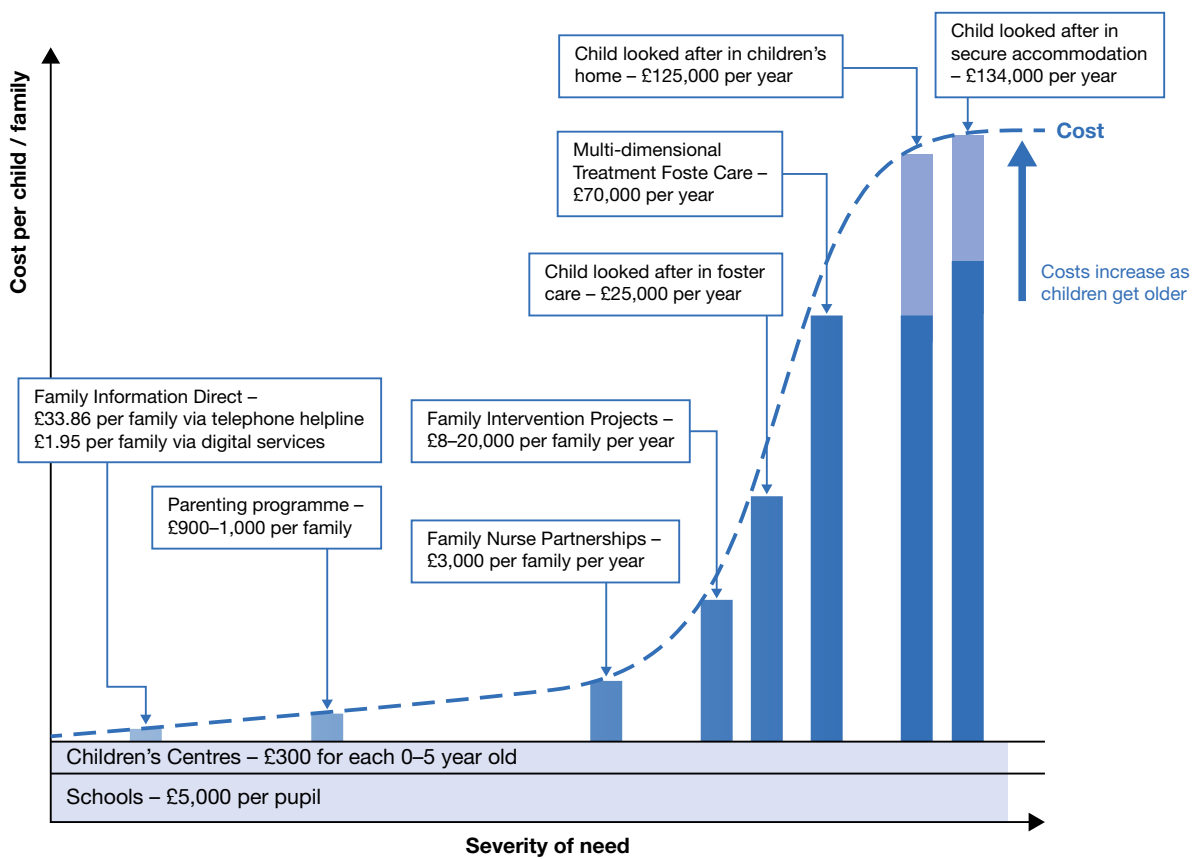


Figure 3: Consequences of not investing in early childhood programs. (Powell, 2010).



## 8.5 Other key findings

**Characteristic of cost-effective programs.** Positive economic returns are unlikely for low-quality preschool programs (Karoly, 2017). The estimated positive returns for targeted and universal preschool programs produced to date derive from moderate- to high-quality programs with at least moderate impacts on outcomes such as school readiness. Lower-quality programs, while costing less, are less likely to generate favourable impacts on shorter- and longer-term outcomes, and therefore less likely to generate positive net benefits to the public sector or to society, than those of higher quality.

**Who benefits from investments in ECEC services?** The economic returns to high-quality preschool programs accrue to multiple stakeholders in the public and private sectors (Karoly, 2017). As with human capital investments, more generally, a large portion of the economic returns to high-quality pre-k programs accrues to program participants in the form of higher lifetime earnings and greater wellbeing (Karoly, 2017; Pascoe & Brennan, 2017). However, governments also benefit. The Commonwealth Government benefits significantly through higher taxes paid on earnings, and saves through reduced unemployment benefits, and other social services and health costs. This is additional to any gains from income tax received from higher parental workforce participation. Given higher educational attainment, the Commonwealth Government may also have slightly higher expenditure in higher education.

The state and territory governments benefit from lower health and justice costs, and lower remediation costs in schools (less additional support and grade repetitions). They also benefit moderately from higher income levels (through payroll taxes), to balance the potential for increased schooling costs due to higher retention rates. Modelling of an earlier early childhood education reform proposal indicated that in Australia, 65 per cent of fiscal benefits would flow to the Commonwealth Government and 35 per cent to state and territory governments (Pascoe & Brennan, 2017).

**What size benefit can be expected?** As the Australian and international studies cited earlier have shown, estimates of the return on investment vary. The Front Project (2019) suggests that a return of 2:1 (\$2 benefit for every dollar spent), whereas Pascoe and Brennan (2017) calculate a 2-4:1 return ratio, Karoly (2016) a 3-4:1 ratio, and Veerapandiyan et al. (2018) a 4:1 rate of return. Others have suggested that the returns may be in the 7-10:1 range (Garcia et al., 2021; Lynch & Vaghul, 2015; Reynolds et al., 2011). Even a 2:1 return still provide ample justification for public investment (Pascoe & Brennan, 2017).

**When do the benefits accrue?** As Karoly (2017) and others have pointed out, many of the outcomes do not generate immediate monetary benefits. The economic gains that can be readily quantified occur at later points in the school-age years and beyond. These can take the form of savings for the education system from reduced grade retention and special education costs or, in adolescence and adulthood, reduced costs associated with crime or higher earnings. Thus, while the costs of implementing the preschool program occur upfront, the benefits accrue over time. Indeed the break-even point — the point where cumulative monetary benefits exceed the upfront investment cost — may not occur for a decade or longer.

Estimates of when this crossover point occurs vary. Pascoe & Brennan (2017) suggest it can take 8-15 years for total benefits to exceed costs, but benefits continue to accrue and exceed costs beyond this point. The Centre for Policy Development (2021) estimates that it could take 9 years to break even and a further 15 to reach full benefits. Others suggest it might take 14 years (Lee et al., 2012) or 20 years (Veerapandiyan et al., 2018) before the economic benefits outweigh the costs.

Figure 4 from Lee and colleagues (2012) shows the economic costs and benefits of early years investments over time. There are two key points to note. First, there is an initial period where the costs outweigh the benefits, in this case about 14 years. Second, once the benefits begin to outweigh the costs, the benefits continue to accrue indefinitely.<sup>7</sup>

7 This is illustrated by the study (cited in Section 6.2) by Garcia et al. (2021) of the intergenerational effects of the Perry Preschool Project.

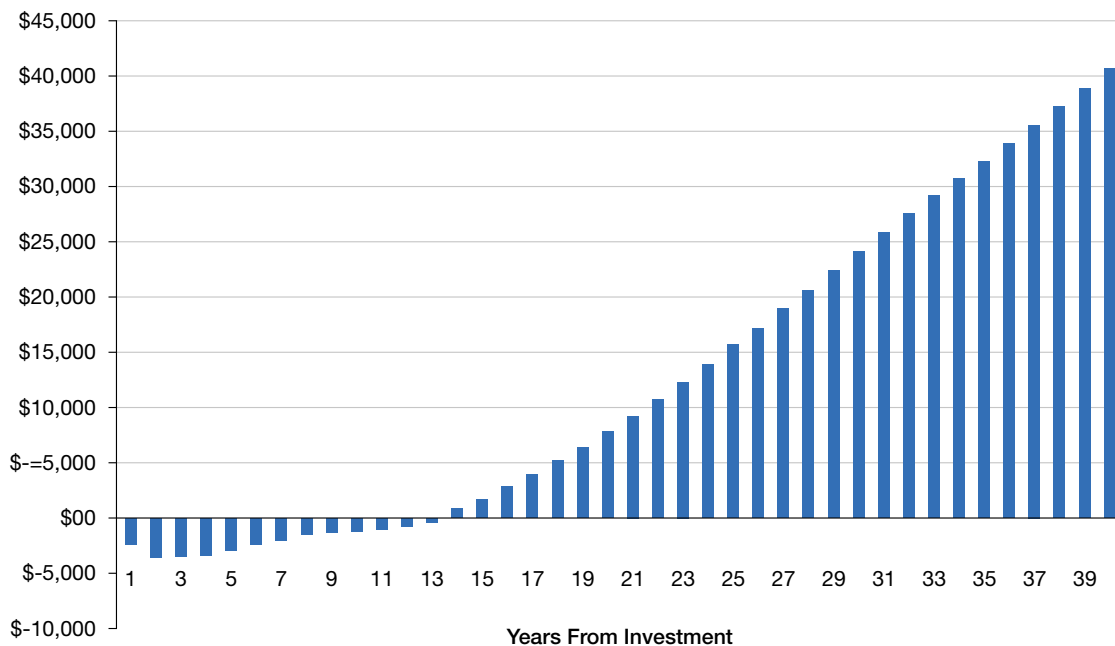


Figure 4: Economic costs and benefits of early years investments. (Lee et al., 2012).

## 8.6 Discussion

Drawing definitive conclusions from the many cost-benefit analyses that have been conducted is difficult. This is partly because of the different contexts in which they have been conducted, the different populations involved, and the different methods of calculating costs used. However, the majority of studies find that high quality universal preschool education programs yield economic benefits beyond the cost of the programs themselves.

Ways of improving cost-benefit assessments of early childhood programs have been discussed by Crowley and Jones (2017) and Dodge (2020)<sup>8</sup>. Crowley and Jones (2017) describe how to quantify and monetise the impact of preventive interventions, and how to assess multisystem service usage, while Dodge (2020) proposes that universal and targeted preventive interventions should be compared and evaluated in terms of their benefit–cost ratio in achieving population-wide impact on mental disorders and related outcomes.

The benefits are experienced both by individuals as well as by governments. The economic benefits for governments take different forms, including increased government revenue as well as decreased government expenditure. After the initial period in which costs outweigh the economic benefits, the benefits begin to outweigh the costs and accrue indefinitely. Estimates of where the cross-over point occurs vary.

As Karoly (2017) has pointed out, because it takes time for many of the favourable effects of a preschool program to become apparent, it can be challenging to estimate the cost-benefits when there has not been sufficient time to observe the outcomes that occur in the school-age years and beyond. It is important to have long-term follow-up data from which to measure later outcomes rather than having to rely on projections based on short-term follow-up information. Australian

<sup>8</sup> Crowley and Jones (2017) propose a new subfield that combines economics with developmental science through the concept of an individual's ultimate net economic burden to society. They propose combining information across adult years from the public costs that an individual bears for health care, incarceration, mental health services, and social services and deducting one's income tax and other contributions to reach a dollar value for each individual's net economic burden. Then, they propose that developmental epidemiology can link early life characteristics to ultimate economic burden, enabling the ultimate economic costs of early experiences and characteristics to be calculated.



studies lack information about long-term effects. Until further studies are undertaken domestically, Australia is largely reliant on international evidence quantifying the economic benefits of early childhood education. Pascoe and Brennan (2017) caution that, when applying the existing evidence base to local contexts, it is necessary to adjust for issues such as local levels of disadvantage and preschool program quality and dosage.



## 9. SUMMARY AND CONCLUSIONS

This report began with an overview of the **evidence regarding child development** that highlighted two key points. The first is the importance of the very earliest stages of development, from conception to the end of the second year. What happens during this period can have life-long consequences. All of this occurs well before the Play2Learn+ program commences, and raises questions about what forms of support should be provided to families during these crucial early years, and how the Play2Learn+ program links with and builds on these early supports. (This does not mean that the Play2Learn+ program will not be effective. As the report goes on to demonstrate, the earlier the intervention, the more powerful the benefits, but intervention at any point is beneficial. The Play2Learn+ program targets families who, for whatever reason, have not engaged with the supports that were available earlier, but who are still likely to benefit from becoming engaged with parenting and ECEC services at this later point.)

The second point is that child and family functioning are shaped by the conditions in which the families are living – their social and physical environments and their access to material basics. These conditions have a major influence on the capacity of the family to provide their children with appropriate nurturing care as well as safe and stimulating home learning environments. These conditions can have a greater impact on child and family outcomes than do the services they receive. There are large socioeconomic variations in the conditions under which families are living, contributing to the socioeconomically-graded outcomes observable in children and families. Services will always struggle to overcome these variable outcomes as long as the underlying factors that produce them are not addressed as well.

The next section reviewed the **evidence regarding school readiness**. It was noted that school readiness is not solely a matter of working directly with the child to ensure they are ‘ready’, but also involves ensuring that the school is ready for the child (understands the child’s needs and has programs to address these), and that the family and the community are able to provide the child with the experiences and learning opportunities during the preschool years that will ensure that children arrive at school ready and able to take advantage of the social and learning opportunities that schools provide. This is important because school readiness is predictive of later school academic achievement. However, it does not determine future achievements; much depends upon the ongoing quality of schooling, especially in the early primary school years.

There is strong evidence that ECE programs can improve school readiness and contribute to subsequent educational achievements, provided they are of high quality. These benefits are long-lasting and wide-ranging, and accrue to the individuals themselves, as well as the wider society and government. Two years of high-quality preschool provides greater benefits than one, and starting earlier yields higher benefits. Children from disadvantaged backgrounds benefit most from attending high quality ECE programs, but gain nothing and may even be harmed by attending low quality programs. These children also benefit from attending schools with a range of other children rather than only other disadvantaged children.

Families differ in their ability to provide children with all the experiences and learning opportunities they need in the early years, which contributes to different levels of school readiness at school entry. Variations in school readiness show a clear socioeconomic gradient: the more disadvantaged children’s backgrounds, the more likely they are to show vulnerabilities on the AEDC. This partly reflects the fact that children from disadvantaged backgrounds are less likely to access ECE programs and are also less likely to have access to high quality EC education. Successfully engaging families who are facing multiple challenges or are marginalised is critical if we are to improve outcomes for them and their children. There are a range of strategies that have been shown to be effective in helping families become more engaged in supporting their child’s early learning and their regular attendance at ECE programs.

The next section analysed the **theory of change underpinning the Play2Learn+ program**. The review found that there is good evidence for the key elements of the Play2Learn+ program’s theory of change – assertive outreach, supported playgroups, preschool attendance, engaging with parents, and the use of coaching and developmental monitoring. Providing these are all delivered in ways that are consistent with best practice and are of high quality, then it is likely that the intervention will succeed in achieving its aims and that there will be positive benefits for the children and families involved. However, it is not enough to assume that the various services will be delivered as intended: there needs to be



ways of monitoring all these key program elements to ensure that they are delivered in ways that are acceptable to parents and that build parental capabilities. There also needs to be support and relevant training for staff who are working directly with the children and families.

The extent to which the program can fully achieve its intended outcomes is limited by two key factors. One is that child outcomes are strongly shaped by the social and material conditions under which families are raising their children, and the Play2Learn+ program does not directly address these conditions. While Play2Learn+ can arrange referrals to other services that can help parents address the challenges they face, there is no guarantee that these services will be available in a timely fashion, or that they will be able to help the family resolve or manage the issues satisfactorily. The ideal would be for Play2Learn+ to be part of an integrated service network providing holistic support to families.

The second limitation concerns the age at which the intervention starts. There is a strong case for starting earlier than 3 years to provide support for early parenting and family functioning. The challenge of finding and engaging with parents for the Play2Learn+ intervention would be much easier if the parents had been involved in appropriate parent support programs since before the children were born. And the gap between their children and those from more well-resourced families would be less if the children had been involved in high-quality childcare services before they reached 3 years of age.

The final section reviewed the evidence regarding the **cost benefits of investments in early years services**. Drawing definitive conclusions from the many cost-benefit analyses that have been conducted is difficult. This is partly because of the different contexts in which they have been conducted, the different populations involved, and the different methods of calculating costs used. While there are some inconsistencies in the findings, the majority of studies find that high quality universal preschool education programs yield economic benefits beyond the cost of the programs themselves. Efforts to improve the sensitivity of early parenting can also have long-term cost savings. These benefits are experienced both by individuals as well as by governments.

The economic benefits for governments take different forms, including increased government revenue as well as decreased government expenditure. After the initial period in which costs outweigh the economic benefits, the benefits begin to outweigh the costs and accrue indefinitely. In general, the economic returns of investments in the early years are higher than those in later years, and are greater for children from disadvantaged backgrounds.





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