



Early Childhood Australia

A voice for young children

**OUR
VISION:
EVERY
YOUNG
CHILD IS
THRIVING
AND
LEARNING**

Inquiry into the Education Evidence Base

Productivity Commission

Early Childhood Australia

About us:

Early Childhood Australia (ECA) is the national peak early childhood advocacy organisation, acting in the interests of young children, their families and those in the early childhood sector. ECA advocates for quality in education and care as well as social justice and equity for children from birth to eight years. We have a federated structure with branches in each state and territory. In 2013, ECA celebrated 75 years of continuous service to the Australian community.

Find out more at: www.earlychildhoodaustralia.org.au



Executive summary

Early Childhood Australia welcomes the opportunity to contribute to the Productivity Commission's Inquiry into the Education Evidence Base.

This is an important inquiry to establish the foundation for education policy which builds Australia's future prosperity.

Early Childhood Australia is the peak advocacy body representing young children and their families. We regularly participate in government inquiries and reviews and works directly with government policy makers to help them develop policy – and we use the available research for our advocacy.

One of our key values is collaboration. To inform submissions to this inquiry ECA hosted a Roundtable at the Murdoch Children's Research Institute with sector stakeholders to discuss the issues raised in the Commission's Issues Paper. This has informed our recommendations to this Inquiry.

Over the past 10 years there has been significant advances in data collection that has enabled us to better understand the effectiveness of quality early childhood education and care (ECEC) on children's outcomes and the economy. These include population data sets:

- The Australian Early Development Census (AEDC)
- National Assessment Program – Literacy and Numeracy (NAPLAN)

There have also been smaller sample data collections including:

- The Longitudinal Study of Australian Children (LSAC)
- The Longitudinal Study of Indigenous Children (LSIC)

These, together with administrative data, regarding enrolment in early childhood education and care, form a significant part of our education evidence base in Australia, and are being used for valuable research undertaken by Australian institutions.

However, there are also considerable limitations to each of these data sets, particularly the LSAC, as well as significant gaps in administrative data. Moreover, the lack of investment in research and lack of a focused national research agenda on education, has led to a reliance on international research in informing policy development, despite significant investment by Governments in ECEC policy programs.

The international evidence base is much stronger on early childhood education and care. And with the exception of a few notable domestic studies, policy makers have relied on this international evidence to help inform Australian early childhood policy development and design.

The recent policy development process through the Productivity Commission Inquiry into Child Care and Early Learning exemplified the domestic data and research gaps in relation to early childhood education in Australia. This problem has frustrated the policy development process and demonstrated the need for further public investment in building the education evidence base in Australia.



Whilst international research will continue strongly influence policy development, we need to build up Australia's domestic research base to better inform government programs in Australia, leading policy development from beginning.

This should be forward looking, tackling the policy questions of the future, not just confirming current policy settings. The data needs to enable the consideration of issues of duration, dosage, quality and the benefits for children in accessing high quality early childhood education programs. In order to address these policy questions, the development of data needs to be led by a strong and nationally agreed research agenda.

This agenda will set the policy outcomes we are hoping to achieve and inform a national data strategy, and the development of National Early Childhood and Education Researchable Data Set. This could build on and link ABS data, AEDC, LSAC and LSIC, NAPLAN and other data sets, and could include new data collections.

It is critical that we develop our Australian domestic research base to help inform early childhood development and early childhood education and care into the future. Australia is now set to invest \$40 billion in early childhood education and care over the next four years in Commonwealth funding alone.

This investment in education programs needs to be informed by a strong evidence base including a concerted research project, which is properly funded. Funding for the LSAC is due to finish in 2017. We think the Government should invest in a new pre-birth cohort and population study to examine the effective provision of early childhood education and care and school education and provide the quality research necessary to inform future education policy in Australia.



A framework for improving the education evidence base for early childhood

The OECD's Starting Strong I, II and IV Reports are a starting point from which to review early childhood education and care data in Australia. The OECD's recommendations remain the foundation for modern policy development in the early childhood education and care, though the recommendations must be viewed in the Australian context.

What did Starting Strong recommend?

The OECD concluded in Starting Strong I that (OECD, 2006, p. 176):

- *A need exists in most countries for a systematic procedure to collect and provide consistent and comparable information on ECEC (early childhood education and care). Currently, the ministries responsible for young children use different indicators and diverse methods in collecting data on young children.*
- *Future data collections need to cover birth- to six-year-olds, and include all forms of provision (including parental leaves), regardless of administrative responsibility (education, health, welfare, etc.), funding source (public, private or mixed), or setting (home, family day care, centre or school). Today, large data gaps appear in statistics addressing young children, and especially children under age three, as whatever data does exist is generally focused on three- to six-year-olds.*

ECA supports the OECD's recommendations. The latter recommendation answers a key question of the Commission in the Issues Paper regarding data collection on children younger than four.

There are clear analogies with the OECD's findings in the Australian context. Australia does not have a fully developed systematic procedure to collect and provide consistent and comparable information on ECEC. Different jurisdictions use different indicators and diverse methods in collecting data on young children.

The Australian Bureau of Statistics (ABS) Preschool Education data collection is focused on three-to six year olds where they are attending a pre-school program only, though some data on three year olds is not provided by reporting jurisdictions. Administrative data on child care participation is collected differently and is not comparable. There are large gaps in data on participation of children at younger ages, particularly children who are not attending an ECEC program.

Investing in the Early Years – A National Early Childhood Development Strategy also recognised six specific reform priorities to address gaps to 2020.

Build better information and a solid evidence base

The aim of this reform priority is to develop national capacity for monitoring, research and evaluation related to children, families and early childhood development services to inform policy and improve transparency under the strategy. Further consideration will be given to:

- consistent unit record information and a comprehensive national minimum data set to support the



early childhood development strategy

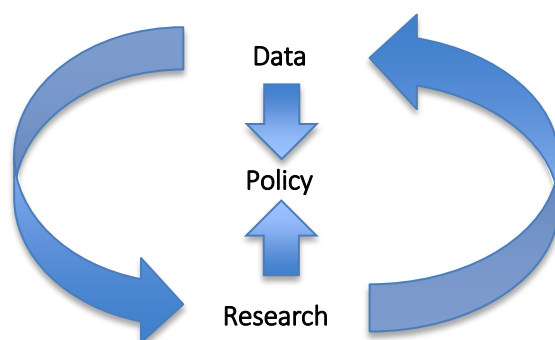
- improving the dissemination of the evidence about early childhood development
- improving reporting (building on existing data development and reporting initiatives)
- implementing a national research agenda
- building the evidence base around innovative and integrated service delivery.

Recommendation

1. Implement the OECD's Starting Strong I recommendations to implement a systematic procedure to collect and provide consistent and comparable information on ECEC with future data collections covering birth- to six-year-olds.
2. Deliver on the Investing in the Early Years – A National Early Childhood Development Strategy's reform priorities to build better information and a solid evidence base including the priority to;
3. Implement a national research agenda

The nexus between data, research and policy

The education data in Australia must be fit for purpose; that is it is well equipped or suited *for its designated role*.



The role of the data is to inform research and policy development. A National Research Agenda for Education would provide the basis of research and policy development drawing and informing the development of the evidence base.

We understand that determining this research agenda may be outside the scope of the Commission's Inquiry. However we think it is within the scope of this inquiry to recommend the development of a new research agenda, without determining what is included in the agenda.



This could be later developed by COAG, the Education Council with the support of the Early Childhood Data Sub Group (ECDSG), in consultation with key stakeholders.

Whilst it may be outside of the scope of the Inquiry to consider the forward research agenda, the purposes of such an agenda must be supported by the data. If the data set is developed without the research agenda in mind, it is unlikely to have a policy impact and future research will be constrained.

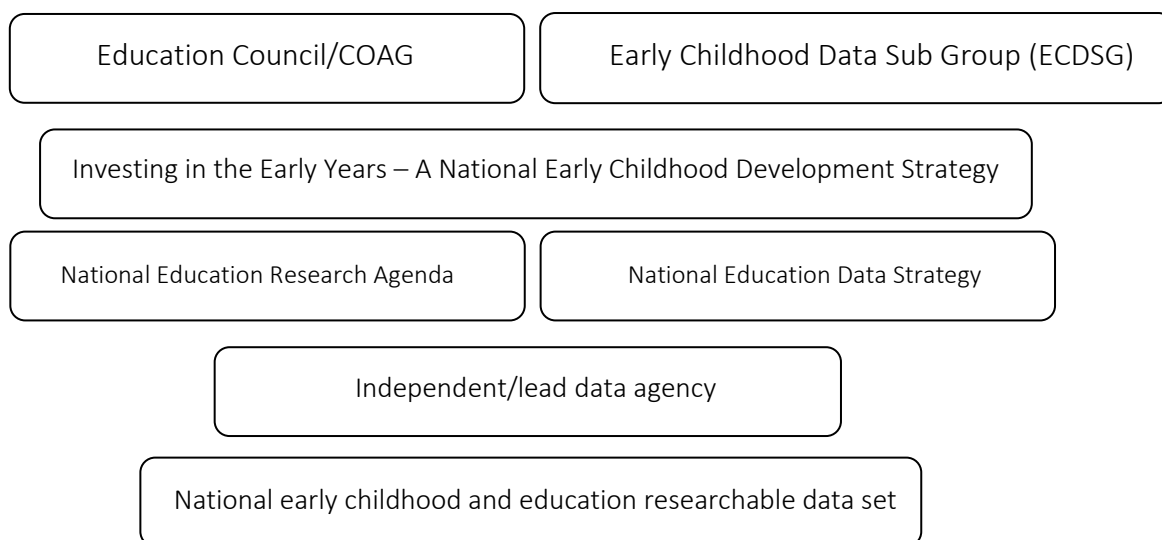
To avoid this issue, we suggest that the Commission provides options which are sufficiently flexible, and go to some of the likely areas of research focus within a possible research agenda.

Governance

In relation to governance, Early Childhood Australia believes that a *National Education Data Strategy* and a *National Education Research Agenda* are key pillars of a national approach to building the education evidence base in Australia.

This will ensure that there is buy-in from states, territories, and the Commonwealth in an agreed research agenda and data strategy, which in turn will facilitate nationally consistent data being provided to establish a proposed *National Early Childhood and Education Researchable Data Set*.

Governance might include establishing or appointing a lead/coordinating agency that is independent and broader than a single government department. The agency would act as a repository of the data and enable streamlined access. This body could also make available standard data measures in regular reports. We suggest that this data set is administered by an independent body such as the Australian Bureau of Statistics (ABS) or another agency.



Recommendations

4. Develop a National Education Data Strategy with a focus on early childhood education.
5. Develop a National Education Research Strategy with a focus on early childhood education.
6. Consider appointing an independent or lead data agency for all education data.



What do we need to know?

The research agenda answers the question on what we need to know and informs the data strategy. ECA strongly believes that the research agenda and the supporting data needs to focus on attendance, quality and outcomes and that this is also reflected in the data strategy.

In relation to quality, we believe that there is more work to do to develop the data and research on key areas of quality, including quality ratings, structural quality elements like staff qualifications and ratios, and importantly, the process quality of early childhood services, and how this affects child/education outcomes.

Improved data and research on attendance is also critical. This includes the dosage in hours attended, and in different sessions or days attendance and the duration of attendance in (years), and how this relates to child/education outcomes.

Research lagging policy

ECA is concerned that policy development is often leading research, and research is lagging behind in helping to inform timely policy debate.

One example is the Universal Access to Early Childhood Education. COAG agreed to the National Partnership Agreement in 2009. The Universal Access program supports children to access 15 hours of preschool in the year before full-time schooling for 40 weeks of the year.

At the time the Universal Access policy was developed, by the Australian Labor Party for the 2007 election, there was only some research in Australia about the benefits of preschool programs in the year before school. The program design that was informed by significantly by international evidence including the UK's Effective Provision of Preschool Study which demonstrated the beneficial effects of 15 hours preschool on children's development.

Later research studies drawing on the LSAC and the AEDC also demonstrated these positive effects in Australia including Brinkmann et al (ongoing), Haisken De New et.al (2013) and others. These draw from the AEDC and LSAC data.

There may be a role for retrospective policy evaluation in the above sense, as it may see evidence based policies maintained over time. However, the ideal situation would see Australian research leading new policy development, rather than a heavy reliance on international research.

While four and five year olds are the focus of current research, the policy debate has firmly moved on. Universal Access for four/five year olds has bipartisan support and is widely recognised as good for children.

Thus, the policy debate is turning to what can be done to improve the participation of children at younger ages.

“Enrolment rates in early childhood education and care (ECEC) have continued to increase for children for the age of 3 and above, as well as for children under the age of 3. This development is partly supported by extended legal entitlements to a place in ECEC and



efforts to ensure free access, at least for some ages and selected population groups.” – OECD

Expanding access to three year olds is currently on the agenda of the OECD, COAG and in State Government policy consultation.

Very little research exists in Australia at the benefit at this age, though there is very strong international evidence suggesting this is the case.

Part of the issue is a lack of administrative data regarding the participation of three year olds in Australia. The ABS collects data on this measure, but some jurisdictions like Victoria do not provide this data to the ABS, despite having a significant number of children attending at this age and targeted programs to support children to access at this age. Yet this is a standard measure published by the OECD in *Education at a Glance*.

What might be included in a National Education and Early Childhood Researchable Data Set?

The Issues Paper asks if there are any additional kinds of data that could add value to the existing evidence base, such as data on non-cognitive skills of students and relevant information from outside the education sector.

ECA recommends that the National Education and Early Childhood Researchable Data Set links, standardises and expands existing data sets.

This includes:

- The AEDC
- Administrative data (Child care and preschool/kindergarten)
- NAPLAN
- PISA, TIMSS/PIRLS

While our preference is for a comprehensive data collection we also believe that the development of a National Early Childhood and Education Researchable data set should be staged/phased and prioritised starting with the data we have. Other data sets could be considered in the longer term including Paid Parental Leave, Family Tax Benefits and Medicare, child protection data, broader family assistance data and maternal child health data.

Data sets should be linked and possibility of a unique identifier could be considered for this purpose, though we understand that this is not the only way to link data. Of critical importance is the need for consistent definition across all data to be implemented in data collections by the Commonwealth, State and Territories and other organisations. One example of this is developing a consistent definition of a preschool program.



Administrative data

Children's attendance and participation, as collected in administrative data is a critical foundation of the education evidence base. We believe that an expanded and nationally consistent and data collection on children's attendance and non-attendance in early childhood education and care across all ECEC settings is critical. This must be sufficiently granular and comprehensive to enable analysis of a range of variables regarding children's participation.

Quality administrative data is fundamental to examining child outcomes and education performance. It is also important to monitoring government policy effectiveness and driving accountability, especially by enabling the monitoring of participation targets and providing comparative assessments of performance.

Non-cognitive skills

ECA supports, in-principle greater data collection on non-cognitive skills. The AEDC data already provides data on non-cognitive skills in the domains of 'Emotional maturity' and 'Social Competence'. Since non-cognitive skills are developed before and after entry to the formal school system we think there is further room to develop the evidence base on children's non-cognitive skill development in the school system alongside NAPLAN. This will require the development of definitions of non-cognitive skills and new instruments to measure non-cognitive skill development. NAPLAN Online might offer an opportunity to develop non-cognitive testing in a more creative way than is possible through current testing arrangements.

Data on children under four

The Commission has asked in the Issues Paper if the scope of the evidence base include data on children younger than 4 years old (or prior to the year before compulsory schooling begins) and if so, why, and should it cover all children, or only those attending early childhood education and care programs outside the home?

The OECD explicitly recommended in *Starting Strong* that children under four should be included.

ECA is of the strong view that administrative data collection should include all children 0-5 and that the data collected regarding children's attendance in ECEC services should be expanded and standardised. If quality administrative data is not collected on children younger than four on their attendance, the impact and effectiveness of earlier interventions (their attendance in early learning) and the impact of later interventions will be difficult to determine.

ECA does not have a position on whether a new data collection should be established for 0-5, measuring children's development, before the AEDC (in the first year of school). Children's development is not linear and so it can be difficult to measure and use data on how children are developing during this period, as children may develop differently. The AEDC, as well as later data such as NAPLAN, already reflect on what has occurred during the first five years, and may be used to research early childhood education effectiveness. However, in order to do this, there needs to be an effective administrative data set which spans the first five years.



Children not attending an ECEC service

Improved data on children who are not attending early learning services is required to understand who is not attending services and actively engage them in participating. This has been a recent problem in Victoria with Aboriginal and Torres Strait Islander children, where the Government could not identify which children were not attending. This made it difficult to target programs at this cohort, designed to increase the participation rates of children in Kindergarten to meet the Universal Access targets.

When it comes to population research, tracking non-attendance would be of great benefit by being able to compare the outcomes of children who have not participated in an early childhood program with those that have.

Early childhood workforce data

ECA would like to see the Workforce Census collection further developed and linked to a national researchable data set. Linking the workforce data to national researchable data set would enable research on how centre quality and conditions affect individual child outcomes.

Ideally we would like to see the same quality of data regarding workforce issues as is collected in Denmark's child care register (See the Appendix). This includes structural quality elements, as well as staff turnover at a centre and room level.

We are concerned that the National Early Years Workforce Development Census 2016 is not as comprehensive as past surveys. We are also concerned that the data is not comparable to previous studies due to the method of collection from service directors and not from individual educators.

Recommendations

7. Establish a *National Early Childhood Development/Education Researchable data set* focused on attendance, quality and outcomes.
8. Link and standardise existing data sets ABS, AEDC, NAPLAN, family assistance administration data and consider other data sets.
9. The scope of data should be across the life-course and should include data, especially comprehensive administrative data, on children younger than 4 years. To the extent possible, this should cover all children, not only those accessing ECEC, as well as pre-birth through to adulthood.

AEDC

The Australian Early Development Census is a world leading data set that has greatly contributed to early childhood research and policy development in Australia. However there is room for improvement in the way this data is currently being used.

However, Early Childhood Australia expresses concern that some AEDC 'macro-data', as published in community profiles, is not available at a state/territory and national level. This includes:



- the proportion of children vulnerable in each AEDC sub-domain
- the proportion of Indigenous children developmentally at risk, or vulnerable across one or more domains of child development

There is no cogent privacy justification for not providing this data at a state level, when the breakdown is already published in the community profiles.

The result is:

- a lack of accountability at a state level for children's outcomes in key areas described under the sub-domains
- data not being available to inform program development both in the non-government and government sectors

For example we do not know how children fare in New South Wales in basic literacy skills sub-domain of child development. There are cogent public policy reasons that this be made available to the general public, following each AEDC collection.

AEDC Sub-domain data not publicly available at a State and National level

The purpose of the AEDC data is to inform research, policy and planning around early childhood and community development.

However, in Australia the AEDC sub-domain 'macro-data' is not made available publicly through regularly published reports at a State/Territory and National level. This data is published a Community/suburb level to help inform community action.

The sub-domain breakdown is very important, as the five AEDC domains of child development are often too broad to be useful in informing policy development. For example, the Language and Cognitive Skills (school-based) domain has five sub-domains:

- Basic literacy
- Interest in literacy, numeracy and memory
- Advanced literacy
- Basic numeracy

While governments have access to this data, the general public, including the NGO sector must make a very detailed data request in order to access even the most basic and low risk data.

Unlike micro-data, and the risk of identifying individuals at the State/Territory and National level in macro-data is low.

The Commission has inferred in the issues paper that there may be political concerns from governments seeking to avoid the scrutiny of cross-jurisdictional data comparisons. This is not a valid public policy reason not to publish regular reports of AEDC macro-data.

The result of requiring an extensive data request for low-risk macro-data is higher regulatory burden,



less informed program and policy development, and low use, despite a significant government investment.

Data requests for this 'macro-data' are bureaucratic, untimely, not suited to purpose and are unnecessary. Ethics agreements should not be required for this data given the nature of the data.

The solution is for macro-data to be freely available on the AEDC website, like the community profiles. The release of this can be staggered over time resolve internal resourcing issues.

Data requests and other protocols should still be applied to 'micro-data' use which has obvious privacy implications.

Recommendations

10. The AEDC data is provided with ongoing funding for the 2018 collection and beyond.
11. AEDC data is published at a state/territory and national level including at least:
 - the proportion of children vulnerable in each AEDC sub-domain
 - the proportion of Indigenous children developmentally at risk, or vulnerable across one or more domains of child development

Privacy

The Issues Paper asks us to consider barriers to sharing or accessing data, and how these can be overcome; such as privacy concerns and national and jurisdictional data governance structures and protocols.

ECA acknowledges that privacy is a key consideration regarding data on young children. This should be balanced with policy considerations, such as the need to effectively monitor and conduct research to improve the education system. Since privacy is not a Constitutional right, we recommend that the Commission looks to legislative means as way to balance the right to access with these important policy considerations. This may include making amendments to the Privacy Act to make provision for approved data access and data linkage.

Whilst often necessary, data ethics agreements, extensive data requests forms and other legislative requirements can act as a barrier to education research and policy and program development. Request forms, and ethics agreements, if necessary, must be fit for purpose and consider claims by non-research based organisations, including the non-government sector that may use data to inform program development.

Certain macro-data should be more widely published in regular reports by an independent body. This avoids the need for a burdensome data request process for even the most basic and low-risk information (See comments on the AEDC). Such data might include AEDC macro-data, administrative data and Preschool data (at a jurisdictional and/or local level).

We understand that in relation to micro-data sets, privacy is a key consideration, in order to ensure the release of personal information is protected. However, in relation to this micro-data, ECA is still concerned about privacy issues acting as a barrier to data use by reputable research organisations.



We support legislative change that would enable greater data sharing/linkage and access for approved organisations and for an approved purpose. This could work on the basis of a one off approval process for accessing all data necessary for a research purpose. We also support exploration of the use of unique identifiers to help link and de-identify individual records.

For example, in this submission ECA proposes that the Government invests in a concerted education research project. Such a project should be given a broad remit of access, through legislative means, to conduct research on education and other relevant data sets for its approved purpose.

Technology and data collection

The issues paper asks us to consider the role of technology in supporting the scope, quality and timeliness of data collection and reporting.

Early Childhood Australia believes that technology can play an important role in collecting important data to further develop the ECEC evidence base.

If there is an expanded administrative data collection, technology will play an important role in ensuring that the collection is not burdensome on service providers.

Concerns with the current reporting of vacancies could be addressed through technology. In particular, a standardised reporting tool could ensure that data is reported accurately and based on the same protocols in all services.

The current child care administrative data is published too late in the *Early Childhood and Child Care in Summary Reports* to be useful informing the market and sector. Technology might enable automated reports to be published or real time data to be available publicly. We also see the value in technology providing localised reports (by local government area) that could be used to inform local markets. For example there are no reports available on how many places, services are available or children/families are attending ECEC in each Local Government Area (LGA) or Statistical Area (SA2), for example. This makes it difficult for governments and ECEC providers to analyse and meet demand for services.

The link between data and practice

The data strategy should consider how data can be used to inform practice, as well as measuring the outcomes of children for a policy purpose.

The format of the AEDC in local community profiles is being used effectively by some early childhood services to inform curriculum programming, planning and quality improvement, responding to areas of community vulnerability across the domains.

For example it is intended that more timely assessments using NAPLAN Online will enable teachers and schools to respond to individual children's/cohort strengths and weaknesses.

Similarly, other data sets might be able to support better practice and the responsiveness of early childhood professionals to individual children's needs.



Costs and benefits

The Commission Issues Papers asks us to consider the costs and benefits of options for improvements to the national education evidence base.

Australia will invest \$40 billion in early childhood education and care over the next four years, yet we still do not have a fully developed domestic evidence base here to ensure the investment is providing the outcomes that the Government is seeking.

ARACY has described the level of investment in research and evaluation as 'systematic under-investment' (ARACY, 2014, p.112).

There is certainly a disproportionate amount being spent on the programmes, with very little invested to ensure the programs are effective and achieving their outcomes. Moreover effort is not concentrated. Much of the investment has been in funding the developed data sets without a parallel and coordinated research program to effectively evaluate them.

The result has been an ad hoc approach with different universities and other institutions conducting often one off studies, usually on the basis of time limited grants or private funding, with particular purposes which are not necessary aligned government strategies.

The Longitudinal Study of Australian Children (LSAC) provides rich data on a range of key influences on children's outcomes across the lifecourse. However, due to a systematic under-investment in research and evaluation in Australia, a substantial proportion of the high-quality evidence on the impact of the early years comes from international sources (ARACY, 2014, p.13).

We are relying more and more on international data and evidence to infer outcomes from similar policy design, but from different contexts, rather than using domestic research. This concern is even recognised explicitly in the Early Childhood Development Strategy:

Further longitudinal research and robust evaluation is needed to know with confidence what programs and service delivery approaches represent the best investments for children in the Australian context. (COAG, 2009, p.12)

While funding is a significant problem, the other issue is the skills and capability of researchers in Australia to use the data in research. The LSAC was first used extensively by economists rather than those in the early childhood development field, because they had the capability to use the data. Building the capability of education researchers to respond to the research agenda is critical.

Forward to the future – investing in a high quality national research project

The Longitudinal Study of Australian Children was a well-intentioned study that has delivered some useful research on early childhood education and care in Australia. However, it has also suffered from a range of issues. The cohorts of children do not reflect current population of children as they attended ECEC services from 2004-2008, period before significant reforms were introduced to improve the quality of early childhood services under the National Quality Agenda.



Due to underinvestment in research studies on the LSAC, studies using the data have been ad-hoc, and at times unaligned to Government policy directions.

One of the most well regarded studies of early childhood and education in the World is the UK's Effective Provision of Pre-School Education (EPPE) and follow up Effective pre-school, primary and secondary education project (EPPSE 3-16+). The initial EPPE longitudinal study assessed the attainment and development of children between the ages of 3 to 7 years. Research began in 1997 and both quantitative and qualitative methods (including multilevel modelling) were used to explore the effects of pre-school education on children's cognitive attainment and social/behavioural development at entry to school and any continuing effects on such outcomes. EPPSE then progressed this research until age 16 in schools and families, examining effective pedagogical practices, phase transitions, the impact of multiple disadvantage on a child, and how children 'succeed against these odds'.

ECA would ideally like to see a study of similar quality and foci replicated here in Australia. Funding for the LSAC is currently due to finish in 2017. Designing and funding a new pre-birth cohort for the LSAC may be an opportunity to refocus the study and properly fund a concerted national research project focused on education research agenda priorities.

Recommendations

12. Invest in a new national pre-birth cohort for longitudinal research (LSAC Mk II).
13. Invest in an ongoing high quality national research project to examine the new pre-birth cohort and population scale data across the early childhood and school education systems, similar to the UK's Effective Provision of Pre-School Education (EPPE)/EPPSE studies in scale, quality and focus.



Recommendations

1. Implement the OECD's Starting Strong I recommendations to implement a systematic procedure to collect and provide consistent and comparable information on ECEC with future data collections covering birth- to six-year-olds.
2. Deliver on the Investing in the Early Years – A National Early Childhood Development Strategy's reform priorities to build better information and a solid evidence base including the priority to;
3. Implement a national research agenda
4. Develop a National Education Data Strategy with a focus on early childhood education.
5. Develop a National Education Research Strategy with a focus on early childhood education.
6. Consider appointing an independent or lead data agency for all education data.
7. Establish a National Early Childhood Development/Education Researchable data set focused on attendance, quality and outcomes.
8. Link and standardise existing data sets ABS, AEDC, NAPLAN, family assistance administration data and consider other data sets.
9. The scope of data should be across the life-course and should include data, especially comprehensive administrative data, on children younger than 4 years. To the extent possible, this should cover all children, not only those accessing ECEC, as well as pre-birth through to adulthood.
10. The AEDC data is provided with ongoing funding for the 2018 collection and beyond.
11. AEDC data is published at a state/territory and national level including at least:
 - the proportion of children vulnerable in each AEDC sub-domain
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Appendix

International data systems - Denmark

In Denmark the administrative registers held by Statistics Denmark, collects an array of information about the population in its Social Research Statistics.

There is also a child care register which has been in place since 1995. This register can track:

- the staff-to-child ratio
- the share of male staff in the preschool
- % of pedagogically trained staff
- % of non-native staff
- the stability of the staff (staff turnover)

“The daycare register covers about 95% of the municipalities. Children and staff in pre-school institutions are linked at the institutional level (cf. Gørtz & Andersson 2010). 4 3.2 2275 preschool and age-integrated institutions were successfully matched for the year 1998. By international standards, this dataset is quite unique. The duration (years being registered) of pre-school attendance is derived from the daycare register. Those records also provide information on the type of daycare institution (pre-school kindergarten and age-integrated institution) and ownership (municipal and selfowned); see section.”

Professor Ted Meluish:

“Denmark is an interesting case. [In] Denmark they have registers. They know everything about you. They know your birth weight. They know the hospital you were born in. They know your immunisation record. They know your illnesses. They know who your doctor was. They know what child care you went to; what centre etc. They know what school you went to. They know all your educational records, all your health records. They know your income tax records. They know your employment records you know etc.

They also have those registers for the centres themselves. They know which staff work in which centre; what the qualification levels of the staff and who moves from staff etc.

So...Bauchmüller in the Danish statistical office took this data and matched the data on the children to the data on the centres that the children went to. And [he] calculated a measure of quality for these centres, like staff-child ratio, training levels of staff, turnover of staff.

And what [he] found was that those children who went to the high quality centres at age 16 had better educational outcomes than the children who went to the lower quality centres.

Now this is great because this is the whole population of Denmark. There is no possibility of any bias in the sample, or anything like that, because it is the whole population.”



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