



**Australian Government**  
**Productivity Commission**

# National Education Evidence Base

## Productivity Commission Draft Report

September 2016

This is a draft report prepared for further public consultation and input. The Commission will finalise its report after these processes have taken place.

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The Productivity Commission is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians. Its role, expressed most simply, is to help governments make better policies, in the long term interest of the Australian community.

The Commission's independence is underpinned by an Act of Parliament. Its processes and outputs are open to public scrutiny and are driven by concern for the wellbeing of the community as a whole.

Further information on the Productivity Commission can be obtained from the Commission's website ([www.pc.gov.au](http://www.pc.gov.au)).

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# Opportunity for further comment

You are invited to examine this draft and comment on it by written submission to the Productivity Commission, preferably in electronic format by 7 October 2016. Further information on how to provide a submission is included on the inquiry website: <http://www.pc.gov.au/inquiries/current/education-evidence>

The Commission will hold public hearings in Melbourne and Sydney. Further locations may be advised if there is sufficient demand by participants. The final report will be forwarded to the Australian Government in December 2016. Under the *Productivity Commission Act 1998* (Cwlth), the Government is required to table the report in each House of the Parliament within 25 sitting days of receipt.

## Public hearing dates and venues

Location	Date	Venue
Melbourne	18 October 2016	Productivity Commission Rattigan Room Level 12/530 Collins Street, Melbourne
Sydney	20 October 2016	Adina Apartment Hotel Fitzroy Room 359 Crown Street, Sydney

## Commissioners

For the purposes of this inquiry and draft report, in accordance with section 40 of the *Productivity Commission Act 1998*, the powers of the Productivity Commission have been exercised by:

Jonathan Coppel

Presiding Commissioner

Julie Abramson

Commissioner

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# Terms of reference

## **Productivity Commission Inquiry into the National Education Evidence Base**

I, SCOTT MORRISON, Treasurer, pursuant to Parts 2 and 3 of the Productivity Commission Act 1998, hereby request that the Productivity Commission undertake an inquiry into the further development of the national evidence base for school and early childhood education.

### **Background**

The Australian Government is committed to working collaboratively with the states and territories to build a world-class education system that equips children to succeed in an increasingly competitive world. Having comprehensive and consistent data that underpins a national evidence base will inform education policy and help improve educational outcomes for children.

While a significant amount of data is currently collected on students, schools and the workforce, data reported nationally is more limited and often inconsistent. Valuable data is also collected outside schools, including in early childhood education and care. Improved access and greater ability to link and analyse national data could enhance the quality and scope of national education evidence that can be used to monitor educational outcomes and inform policy development and evaluation.

Through consultation with states and territories, education authorities and other key stakeholders, this Inquiry will help to identify current investment in national data collection and education evidence, opportunities to collectively invest further, and how we can improve the effectiveness of our investment through a more streamlined, comprehensive and collaborative national approach.

Improving the collection and management of education data in Australia will assist to create a more robust national education evidence base for effective policy and program development to meet our national education objectives and lift our national productivity.

### **Scope of the Inquiry**

The Commission is to provide advice on the refinement of the national approach to collecting and using data for early childhood education and care and schools, and other information as relevant, to improve Australia's educational outcomes.

In undertaking this Inquiry, the Commission should use evidence from Australia and overseas to report on and make recommendations about:

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1. The information required to provide a comprehensive evidence base to inform policy development in early learning and school education now and in the future. This includes consideration of current data holdings at a national, state and sectoral level, their effectiveness in supporting educational outcomes, and the long term vision for such educational data holdings.
  2. What additional information could be considered and how it might add value to the existing evidence base. This may include data concerning non-cognitive skills, and information from other sectors, including but not be limited to: employment, health, social services, early childhood and higher education.
  3. Existing or potential barriers to the sharing of education (and other relevant) data and how these can be overcome. Considerations should include, but not be limited to: privacy concerns, costs, technological capacity, sector-based sensitivities, national and jurisdictional data governance structures and workforce capability.
  4. Factors that inhibit access to, and consistency of, education-relevant data to support analysis and evidence-based policy development. Considerations should include, but not be limited to: privacy concerns, legislative and technical frameworks, national and jurisdictional data governance structures, workforce research and analytical capabilities, stakeholder engagement, sector-based sensitivities and implementation timeframes.
  5. The role technology and mobile devices can play on the scope, quality and timeliness of data collection and reporting.
  6. The costs and benefits of options for improvements to the national education evidence base including the administrative and financial impacts on schools and early childhood education and care providers of any suggested change in data collection practices. Consideration should include what opportunities exist to apply efficiencies to existing data collection.
  7. How Australian and overseas governments have approached the use of evidence and sharing data to improve outcomes (in education and non-education sectors) and the potential benefits and challenges of adopting these practices in the Australian education context.

## **Process**

The Commission is to undertake a public consultation process, including holding hearings, inviting key stakeholder and public submissions, and releasing a draft report.

The final report should be provided within nine months of receipt of these terms of reference.

SCOTT MORRISON  
Treasurer

[Received 11 March 2016]



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# Abbreviations

ABS	Australian Bureau of Statistics
ACARA	Australian Curriculum, Assessment and Reporting Authority
ACECQA	Australian Children’s Education and Care Quality Authority
AEDC	Australian Early Development Census
AESOC	Australian Education Senior Officials Committee
AHURI	Australian Housing and Urban Research Institute
AIFS	Australian Institute of Family Studies
AIHW	Australian Institute of Health and Welfare
AITSL	Australian Institute for Teaching and School Leadership
ALLD	Australian Longitudinal Learning Database
ALRC	Australian Law Reform Commission
APP	Australian Privacy Principles
AURIN	Australian Urban Research Infrastructure Network
BES	Best Evidence Synthesis
CCMS	Child Care Management System
CYDA	Children and Young People with Disability Australia
CESE	Centre for Education Statistics and Evaluation
CITO	Central Institute for Test Development
COAG	Council of Australian Governments
DAC	Data Analytics Centre
DET	Australian Government Department of Education and Training
DSG	Data Strategy Group
EC	Education Council
ECEC	Early childhood education and care
EEF	Education Endowment Foundation
ESA	Education Services Australia
HILDA	Household, Income and Labour Dynamics in Australia Survey

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HREC	Human Research Ethics Committee
ICILS	International Computer and Information Literacy Study
ICT	Information and communications technology
IES	Institute of Education Sciences
IPP	Information Privacy Principles
IT	Information Technology
ISDTN	Interstate Student Data Transfer Note
LSAC	Longitudinal Study of Australian Children
LSAY	Longitudinal Survey of Australian Children
LSIC	Longitudinal Study of Indigenous Children
MADIP	Multi-Agency Data Integration Project
MCEETYA	Ministerial Council on Education, Employment, Training and Youth Affairs
METeOR	Metadata Only Registry
NAP	National Assessment Program
NAPLAN	National Assessment Program – Literacy and Numeracy
NCCD	Nationally Consistent Collection of Data on School Students with Disability
NCRIS	National Collaborative Research Infrastructure Strategy
NECD RD	National Early Childhood Development Researchable Data Set
NECECC	National Early Childhood Education and Care Collection
NCVER	National Centre for Vocational Education Research
NHMRC	National Health and Medical Research Council
NMA	National Mutual Acceptance
NPSI	National Plan for School Improvement
NQA ITS	National Quality Agenda IT System
NQF	National Quality Framework
NSSC	National School Statistics Collection
NSIP	National Schools Interoperability Program
OAIC	Office of the Australian Information Commissioner
OECD	Organisation for Economic Co-operation and Development
PHRN	Public Health Research Network

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PIRLS	Progress in International Reading Literacy Study
PISA	Programme for International Student Assessment
SCRGSP	Steering Committee for the Review of Government Service Provision
SCSEEC	Standing Council on School Education and Early Childhood
SIF	Systems Interoperability Framework
SRC	Social Research Centre
SURE	Secure United Research Environment
SVA	Social Ventures Australia
TAFE	Technical and further education
TALIS	Teaching and Learning International Survey
TIMSS	Trends in International Mathematics and Science Study
USI	Unique Student Identifier
VSN	Victorian Student Number
VET	Vocational education and training

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# OVERVIEW

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## Key points

- Notwithstanding substantial increases in expenditure on education over the past decade, national and international assessments of student achievement in Australia show little improvement and in some areas standards of achievement have dropped.
- Monitoring outcomes, performance benchmarking and competition between schools alone are insufficient to achieve gains in education outcomes. They must be complemented by the use of data and evidence to identify, and then apply, the most effective programs, policies and teaching practices.
- A national education evidence base is broader than a national data repository and requires two key capabilities:
  - a ‘top-down’ capability, for monitoring, benchmarking and assessing performance in achieving objectives at all levels of the system, as well as promoting transparency and accountability, and informing resource allocation
  - a ‘bottom-up’ capability that evaluates the effectiveness in education policies, programs and teaching practices, enabling systematic identification of ways to improve student achievement.
- There is much education data collected, imposing a substantial compliance burden across schools and ECEC services. This burden can be reduced by collecting data more cost-effectively and making better use of it.
  - Access to, and sharing of, data can also be improved through changes to privacy protections and processes for collecting, sharing and linking of data.
- There are some gaps in existing data collections. But the largest gap of all is in the evaluation of policies, programs and teaching practices in Australian schools and ECEC services to identify what works best, for whom and in what circumstances.
  - Without improving and applying evidence to policy making and teaching in schools and classrooms, there is a substantial risk that increased resourcing of schools will continue to deliver disappointing outcomes.
- The Australian, state and territory governments must take a shared and cooperative approach to developing a high-quality and relevant Australian education evidence base. There are already effective arrangements for monitoring and performance reporting. With respect to implementing the bottom-up capability, governments should:
  - put in place a new Education Agreement (building on previous agreements) that defines the objectives of, and framework for, commissioning and applying evaluative research about what works best
  - assign an institution to be responsible for the implementation of the evaluative research framework, which is accountable to, and funded by, all governments
  - specify the assigned institution’s governance arrangements, functions and operations.

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# Overview

Early childhood education and care (ECEC) and school education bear on the wellbeing and quality of life of young Australians as well as on the capabilities and productivity of Australia's future labour force. Recognising this, Australian governments have committed to national education goals that emphasise the importance of excellence and equity in Australia's education system. Like other developed nations, Australia has sought to achieve these goals through increased investment in education and by implementing reforms focused on monitoring, performance benchmarking and reporting against national standards.

However, these reforms have not achieved the desired gains in education outcomes. Australian students' performance on national and international student assessments has stalled or, in some cases, declined. Australia is not alone in this regard. Other countries have also substantially increased their investment in education, and emphasised targets, accountability and transparency, with the aim of driving improved outcomes through competition between schools. Yet these efforts have not seen commensurate improvement in metrics of student achievement (for example, mathematics, figure 1).

There is a growing consensus that increased resourcing and an accountability focus, alone, are insufficient to achieve gains in education outcomes. Adopting and applying an evidence-based approach to education policy and teaching practices is what drives a better allocation of resources and improved outcomes.

## What has the Commission been asked to do?

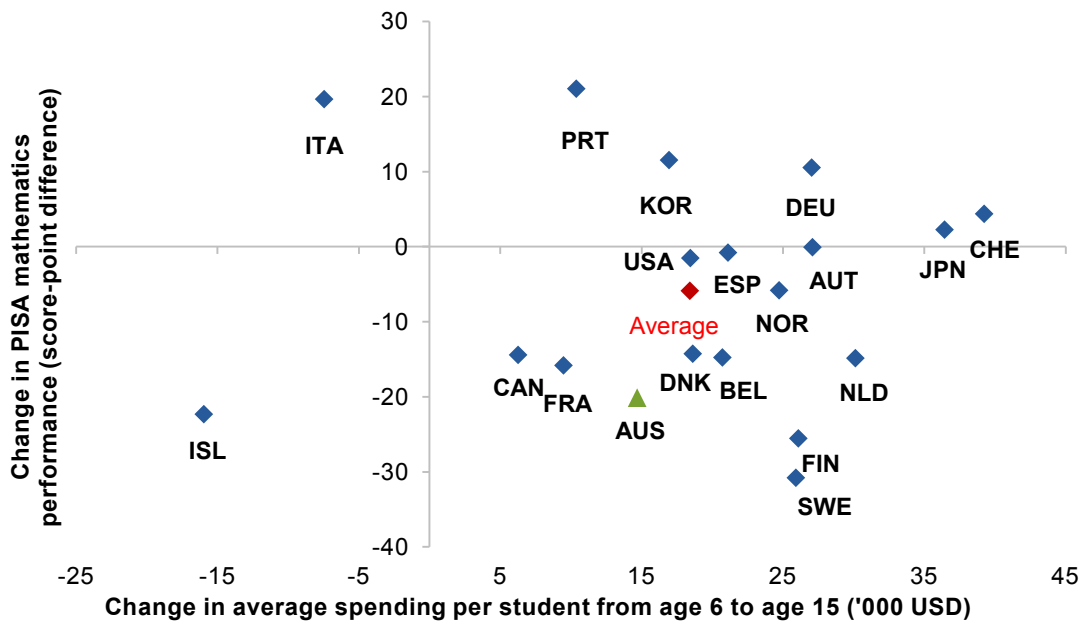
The Australian Government has asked the Commission to investigate the further development of a national education evidence base. The task is to consider the case for, and specific nature of, a national evidence base for use in informing policy development and improving education outcomes in early childhood and school education.

The Commission has set out a framework for how to improve Australia's evidence-based education policy capability and embed evidence-based decision making in education policies, programs and teaching practices. The Commission has not reviewed the education evidence base itself. Judgments or analyses about 'what works best' in education practice are beyond the scope of this inquiry.

Specifically, the Commission has assessed and made recommendations about: the information required to provide a comprehensive evidence base; data collections that would add value to the evidence base; addressing barriers to the sharing of education data;

factors that inhibit access to and use of data; and the role that technology can play. The Commission has looked at these issues through the lens of their costs and benefits.

**Figure 1 Increased resourcing has not delivered commensurate improvements in student achievement**  
2003 to 2012, selected OECD countries



## What is a national education evidence base?

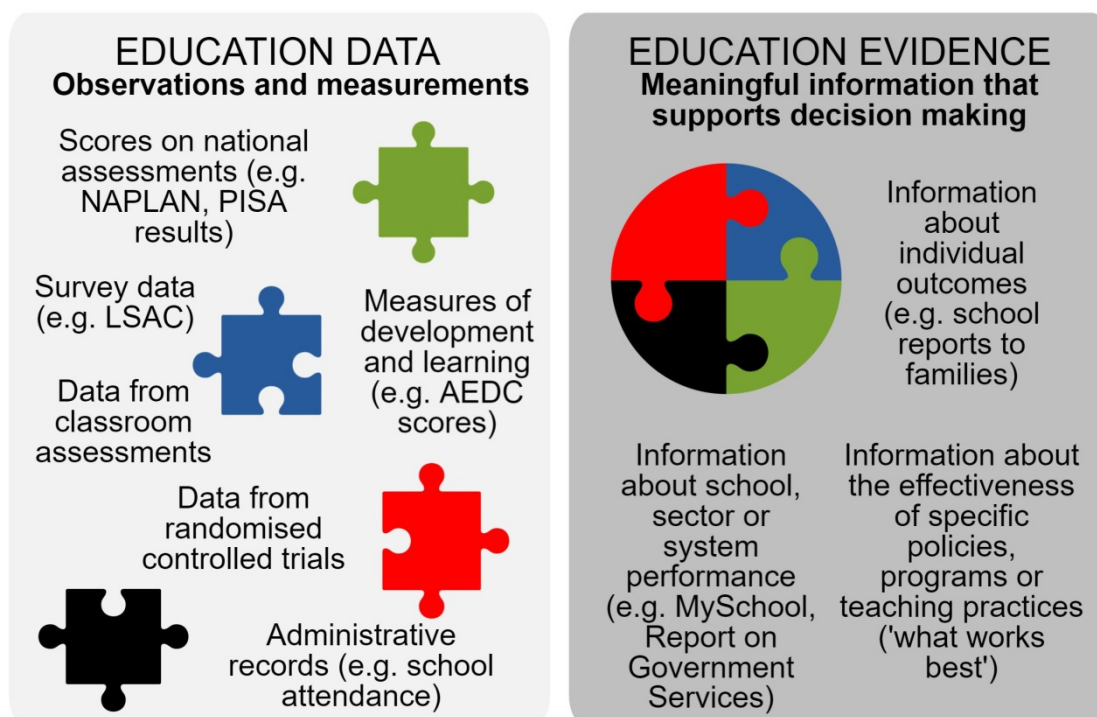
A national education evidence base supports the monitoring of progress against education objectives, the identification and diagnosis of problem areas, and the development of ways to improve ECEC and school education outcomes. It is also essential for promoting transparency and accountability by those responsible for policy formulation and its implementation in schools and ECEC settings.

An effective national education evidence base is more than a simple accumulation of data in a single collection or data 'warehouse' (figure 2). It should support decision makers at all levels of the education system (national, jurisdictional, schools and ECEC services, teachers) to make informed choices about programs, policies and practices. The overarching policy objective is to improve education outcomes in a cost-effective manner.



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Figure 2 **Distinguishing between data and evidence**



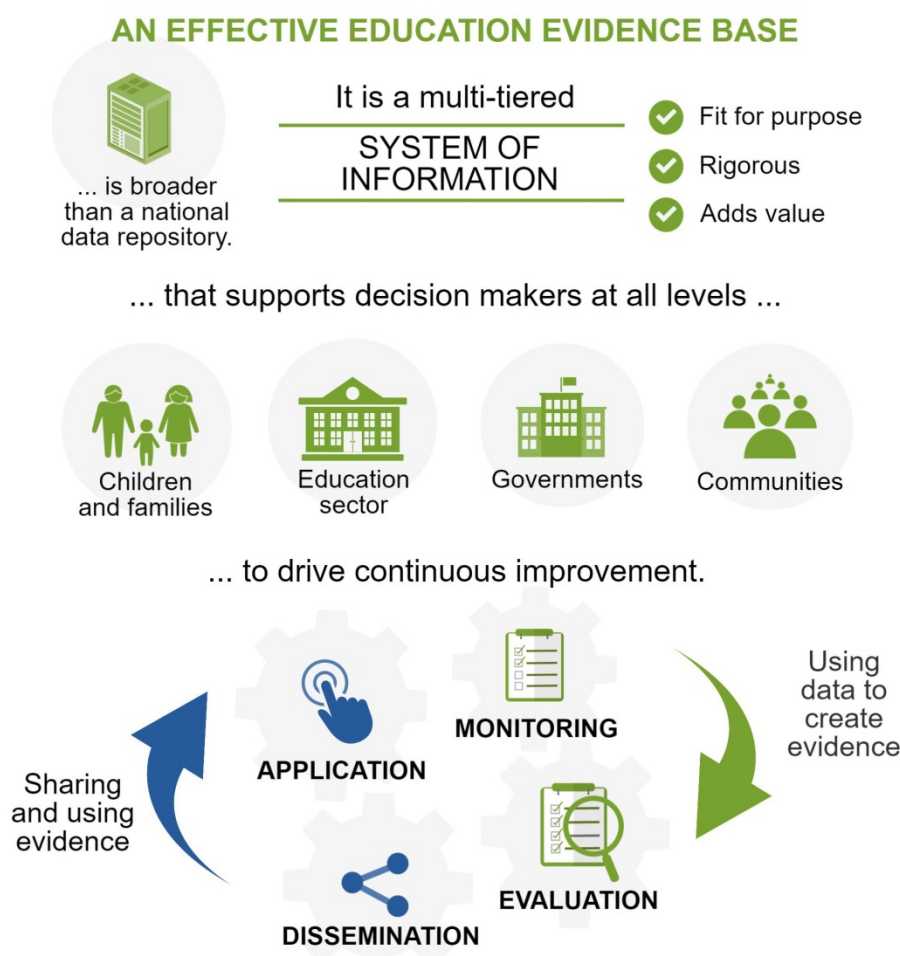
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## A framework for furthering the education evidence base

The Commission's framework for assessing the requirements for a national evidence-based education policy capability is outlined in figure 3. In supporting the further development of a national education evidence base, governments should be guided by principles. Specifically, the national evidence base should:

- meet the varied needs of decision makers at all levels of the education system
- provide high-quality data and evidence to inform decisions
- drive improved student achievement through four interconnected processes — monitoring of performance, evaluation of what works best, dissemination of evidence and application of that evidence by educators and policy makers
- generate benefits in excess of the costs incurred in collecting and processing data and in creating, sharing and using evidence.

Figure 3 **An education evidence base**



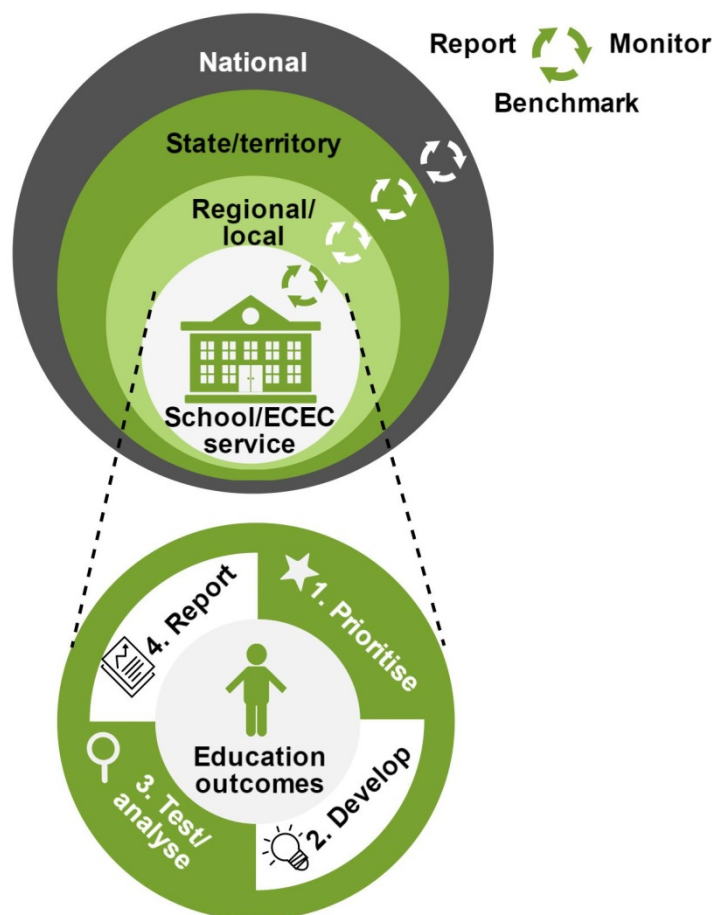
Central to this framework is the importance of complementing ‘top-down’ monitoring and performance benchmarking of the education system with ‘bottom-up’ evaluation of what works best in education policies, programs and teaching practices (figure 4).

Monitoring and benchmarking promote transparency and accountability about how the education system has performed in light of the resources invested in it, as well as guiding resource allocation. Monitoring is an essential first stage in an evidence-based approach to improving education outcomes. Without good measures of progress towards stated objectives — and benchmarks against which to interpret this progress — it is not possible to assess robustly the efficacy and cost-effectiveness of policy interventions or school programs. That is, monitoring complements, and is a precursor to, effective evaluation.

However, top-down monitoring and benchmarking alone are insufficient to drive improvements in education outcomes. Measuring and monitoring performance does not automatically lead to insights as to what policy and practice can do to help students to learn better, teachers to teach better, and schools to operate more effectively.

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Figure 4      **Top-down and bottom-up processes are essential and complementary**



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Research has found that only a small share (typically about 20 per cent) of variation in individual student outcomes is explained by differences between schools. The majority (about 80 per cent) is explained by differences between students within schools. Furthermore, there is a substantial body of evidence suggesting that teachers have the greatest impact on student performance outside of students' own characteristics, and that directing attention to higher quality teaching can have large positive effects on outcomes across the board. All of this suggests that looking within the classroom, particularly at teaching practices, can be more effective at providing insights into how to improve education outcomes across schools and students.

Evaluation plays a crucial role in identifying which teaching practices and school programs are the most effective and offer the best value for money in terms of improving outcomes. This requires creating high-quality evidence on what works to improve education outcomes, while meeting the needs of educators in applying education evidence.

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## **Existing data should be collected and used more effectively**

All Australian governments invest considerable effort and resources in collecting data on ECEC, schools and external influences impacting on education outcomes. For example, there are national ECEC collections that contain administrative data on: children, staff and ECEC providers; child development at age five; ECEC service quality; and the ECEC workforce. In the school sector, there are national data collections that include data on all students, staff, schools and student outcomes. Collections on external influences on outcomes include health, social services, and demographic and labour force data. The potential of these collections is not being fully realised.

### **Data linkage can leverage the value of existing data**

Data linkage is a key area in which greater value could be drawn from existing data holdings. Data linkage leverages the value of existing education (and other) data for evidence-based education policy and teaching practice. It can enable a more comprehensive understanding of the factors that contribute to education outcomes, and can also support the targeting of education interventions to specific groups in the population, such as students with disability. Almost universally, inquiry participants supported greater linking of data collections to facilitate research and further the education evidence base.

The main impediments to greater use of data linkage are the complexity of the legislative environment governing the management of personal information and a risk-averse culture that has developed among data custodians and ethics approval committees. This culture adds considerably to time delays and costs involved in gaining access to data, and prevents some research proposals from proceeding. The system of data linkage could be improved if linked data were retained by the linking authority.

### **Privacy provisions should be streamlined**

The public interest benefits of allowing greater access to data are substantial, but they need to be balanced against the legitimate risks associated with misuse of that data. However, achieving this balance is hampered by the complexity of the legislative environment governing the use and disclosure of information. There is scope to maximise the usefulness of existing data while respecting the goals of privacy legislation.

Differences in federal and jurisdictional privacy Acts, as well as education Acts impose excessive limits on the ability of education data custodians to release data that contains personal information. These differences can prohibit entire data collections from being accessed or prohibit disclosure of component cohorts of the same dataset.

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Several jurisdictions specifically allow the sharing of data with other jurisdictions provided the recipient is subject to the same privacy principles as the originating jurisdiction. This effectively means mutual recognition of privacy laws in ‘like’ jurisdictions.

However, a lack of uniformity remains in privacy regulation across jurisdictions. Greater uniformity of privacy laws would go some way toward reducing the regulatory complexity that contributes to the risk averse behaviour of data custodians. The Australian and ACT Governments should extend available exceptions to privacy laws to cover public interest research purposes generally. Western Australia and South Australia do not have a legislated privacy regime. These jurisdictions should ensure that their privacy arrangements reflect a similar public interest research exception.

### **Obtaining prior consent could facilitate greater access to data**

Administrative data have often been collected without consent to share or use personal information for another purpose. In this situation, the data custodian is not able to disclose personal information to other entities or researchers. Further, it might not be practical for each researcher to obtain consent to use personal information from each individual for each dataset the researcher is seeking access to. The absence of consent makes it challenging to bring datasets together for research into education.

Processes for collecting personal information should be amended to incorporate formal consent and/or notification features regarding the use and disclosure of personal information at the point of enrolment and at the beginning of survey and other data collections.

### **Restrictions on access to de-identified data should be removed**

Privacy laws do not apply to de-identified data (data that do not contain personal details, such as names and addresses), so data custodians should not use privacy law as a basis for restricting access to such data. Concerns that users of de-identified data will try to re-identify individuals using other data sources could be addressed through a memorandum of understanding between the data custodian and the user that would prohibit such activity as a condition of access. Governments should also introduce clear policy guidelines that place the onus on data custodians to release data unless a privacy (or other) exception can be justified. This would help to make the process of accessing education data more streamlined, transparent and efficient.

Ethics committees sometimes restrict access to de-identified data for research purposes on the basis of judgements about the worthiness of the proposed research. There is no case for restricting access to data on such grounds, as access to de-identified data does not directly involve an intervention with a child or young person.

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Where research requires linking of data collections using personal information, or trials involving individual children or young people, ethics committees will still play an important role. However, there is scope to simplify the process. Often it is necessary before a research project can proceed to obtain approval from more than one ethics committee. A national research project may require as many as 20 approvals. The time and costs involved can be high and this is likely deterring research from proceeding. This is another area where a system of mutual recognition of approval decisions by data custodians and ethics committees would make the process of accessing education data faster and less costly.

### **A register of available datasets and metadata is needed**

There is often limited information available to researchers about the contents (data items) of education datasets. Researchers are, therefore, unable to easily determine whether there is a collection that would fit their data requirements.

One way to address this matter is through creation of metadata repositories. An online metadata repository for education data collections could play an important role in bringing education datasets to the attention of researchers and clarifying the information that could be available, particularly in administrative datasets. A good example to draw on is METeOR, the Australian Institute of Health and Welfare's online metadata registry for the health, community services and housing assistance sectors.

### **A unique (or universal) student identifier might be of value**

All Australian governments endorsed the establishment of a unique student identifier in 2009. But to date, there has been limited progress towards this goal. Currently, most jurisdictions use identifiers for different parts of their education systems, but only Victoria and the ACT use a unique identifier across government and non-government schools (ECEC is not covered).

The introduction of a unique (or universal) student identifier could assist in tracking the outcomes of individual children and young people over time as well as across jurisdictions and between government and non-government schools. However, it is not clear whether the benefits of a national identifier would outweigh the costs. Existing jurisdictional identifiers could be used to track young people over time and as they move between school sectors within a state. A national identifier would be beneficial in tracking students across state borders, but fewer than 2 per cent of students move interstate in any year.

The value of a national identifier would be higher if it covered children in ECEC, as data on children in childcare settings are collected by the Australian Government. A national identifier could, therefore, facilitate the sharing of information between ECEC providers and schools. But the costs of administering a system that covered ECEC could be significant.

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The Commission is seeking further information on the costs and benefits of moving toward a national student identifier.

## **Data collection costs could be reduced**

There are significant costs to collecting data. Administrative costs are borne by the agencies responsible for aggregating, processing and reporting on data. These costs are often concentrated, so are more visible within the responsible government agencies. Compliance costs are borne by the organisations and individuals, like schools and childcare providers, teachers and parents that supply the data to these agencies. Compliance costs are often hidden and less readily observable because they are spread across a large number of data providers. Data providers are also exposed to the cumulative costs from having to supply data for multiple collections. For example, schools must report on attendance, finance and student background. Compliance costs could be reduced.

## **Surveys and samples could be used instead of censuses**

It is not always necessary to have data on the full population to create robust and informative evidence. Surveys and testing programs administered to samples of students can significantly increase the breadth of information collected and provide for the quality of analysis and evidence required, at lower cost than censuses.

## **Duplication could be addressed**

Duplication in data collection or processing unnecessarily adds to compliance costs for data providers and increases the administration cost of agencies.

Duplication in data provision obligations can occur because departments or governments are unable or unwilling to share the information they gather (or to share information in the form preferred by users of the data). For example, a school may be required to supply information on students with disability to both the Australian Government and to a state government, using different definitions of disability.

## **Reporting requirements could be changed less frequently**

Changes to reporting requirements impose additional compliance costs on those providing data, particularly when these changes are frequent. Education providers upgrade their information systems on regular cycles and vendors incorporate new reporting requirements into their systems. Costs can be reduced by avoiding frequent changes to reporting requirements, and when changes are necessary, by allowing respondents sufficient time to comply with the new reporting requirement.

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Smart use of technology can reduce duplication and improve data quality, including timeliness in reporting. Information technologies can also make data collections simpler to use and easier to interpret by educators, parents and the community.

### **Data quality issues should be considered**

Many education data collections have characteristics that might be construed as quality issues (for example, timeliness of release or the accuracy with which concepts are measured), but not all quality issues should, or can, be addressed. Any decision about whether to address a data quality issue should be guided by the following considerations.

- Is there a need to improve the quality of data so it is fit for purpose? The case for addressing a data quality issue is strongest if the data are not fit for the purpose for which they are collected.
- If there is a case to improve data quality, is improvement feasible? Data collectors sometimes have little control over the data provided to them. Parent-reported data on education and occupation collected by schools, for example, are likely to contain many gaps and errors, but there is little that schools can do to address this.
- Could the desired data be obtained using a different approach? Data linkage or new fit-for-purpose collections might be a more effective and efficient way of addressing an issue.
- Would there be a net benefit in improving data quality? Improving data quality is likely to impose costs on those who provide, collect and manage data. The benefits of improving data quality — for example, opportunities for valuable research that would not otherwise be possible — must outweigh these costs.

### **More work is required to address data gaps**

It is not difficult to identify potential candidates for new data collections. But, as noted above, collecting data involves significant costs. In identifying where new collections are warranted, the Commission has focused on areas that have the largest potential to improve national monitoring and evaluative processes, with the ultimate goal of improving education outcomes.

### **Additional national collections are needed and steps are in train**

Additional data need to be collected to support the monitoring of progress against Australia's education objectives, including:

- national measures of student achievement in Year 1, which would facilitate value-added analysis and shed light on the impact of early achievement on later outcomes



- 
- measures of students' non-cognitive capabilities and wellbeing, which would reveal progress in the development of students' social and emotional skills
  - more appropriate measures of outcomes for students with disability.

In addition, improved workforce data are necessary to support workforce planning and assessment of the impacts of initial teacher education on classroom readiness and student outcomes.

Steps are in train to address these gaps. The Australian Government has announced that Year 1 assessments will be introduced nationally. The Australian Curriculum, Assessment and Reporting Authority is working to include assessments of personal and social capability in the National Assessment Program, and is collaborating with states and territories to better measure student wellbeing and engagement. The Nationally Consistent Collection of Data on School Students with Disability may assist teachers in monitoring progress and in responding to the needs of students with disability. And the Australian Institute for Teaching and School Leadership is working on a national minimum dataset that will provide more comprehensive and continuous data on school teachers.

Furthermore, systematic and consistent measures of childhood development would assist in monitoring whether the Early Years Learning Framework is achieving its objectives. The Commission is seeking further information on whether the Australian Early Development Census is fit for this purpose.

## **A new longitudinal cohort of Australian children should be funded**

Linking of existing (and new) national data collections could support valuable research, but some questions are more effectively addressed using the more detailed longitudinal data that can be collected in a dataset created for research purposes.

The Longitudinal Study of Australian Children and the Longitudinal Study of Indigenous Children (started in 2004 and 2008, respectively) have yielded insights into children's outcomes. But many of the children in the original studies are now teenagers. Economic and social conditions have changed, as have many policy settings, since these studies commenced. New cohorts need to be recruited periodically to support ongoing analysis of children's outcomes.

## **Information about external influences**

Education outcomes are affected by influences that the education system cannot directly manage, for example, a child's gender and health and the culture of their home learning environment. It is important to take these external influences into account when evaluating the effects of education policies, programs and practices on education outcomes. If data on these influences are not available, valuable insights about how the effects of an initiative

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vary for different groups of children (for example, between those from more and less advantaged backgrounds) will be missed. There is also the risk that estimates of the relationship between an initiative and an outcome will be biased.

Much information on external influences is already available from education and administrative datasets and the Australian Census. Where such data are fit for purpose, improved data linkage processes will suffice, leveraging the value of existing collections.

However, there remain some significant gaps. Data are lacking, for example, on the nature of parents' engagement in their child's education, and the culture of the home learning environment. There is merit in collecting these data, but they do not have to be collected for all students. The data considered to be most relevant could be collected for a representative sample of students.

## **Three evidence gaps need attention**

### **The contribution of early childhood education and care to outcomes**

There is a growing body of international evidence on the benefits of quality ECEC, but there is limited evidence for the Australian context. Unknowns include how ECEC attendance affects children's outcomes, including subsequent school achievement, and how ECEC programs benefit different groups of children and families.

These issues could be explored using linked data. The National Early Childhood Development Researchable Data Set being developed by the Australian Institute of Health and Welfare could be fit for this purpose, although development of this resource is currently on hold.

### **Value-added measures of education outcomes**

Point in time measures of student achievement, captured in National Assessment Program — Literacy and Numeracy (NAPLAN) scores for example, do not provide a full picture of the impact that schools have on student learning. Value-added measures are preferred because they take into account two additional aspects of student achievement: progress over time and external influences that schools have little control over. That is, value-added analysis focuses on the value that a school has added to a student's learning, over and above that expected given the backgrounds and prior levels of achievement of students within the school. These measures are a useful starting point for further analysis of high-performing schools to shed light on school effectiveness and build understanding of how to improve education outcomes.

Use of these measures is in its infancy in Australia.

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## What works best to improve outcomes?

Many of the questions that decision makers in the education system need answers to are descriptive — for example, ‘how well are students performing?’, ‘how are resources distributed?’ and ‘how many students are undertaking initial teacher training?’. Questions of this type are associated with monitoring and benchmarking, or a top down approach. Answering them typically requires large scale datasets and relatively simple data analysis.

Questions like ‘will the things that improve outcomes in this successful school work in other schools?’, ‘what effect does this program have on student outcomes?’ and ‘what is the most effective teaching practice for this material?’ are causal. High-quality and rigorous assessment of questions like this typically requires a bottom-up approach, using small scale datasets that are often question specific and apply sophisticated research methods.

Some potential targets for this analysis of how best to improve outcomes will be relatively easily identified, such as literacy and numeracy programs or the use of information technologies in the classroom. Others can be uncovered through exploratory analysis of the relationship between an outcome of interest and factors that might affect it, using larger scale datasets.

Whether a relationship is causal can then be tested using appropriate, high-quality, research techniques. The gold standard for these techniques is meta analyses of randomised controlled trials and individual trials. Such approaches are the norm in health research, but they are seldom used in Australian education research.

An example of the insights that this type of evaluation can yield is set out in box 1.

### **Box 1      Applying randomised trials to evaluate teaching assistants in the United Kingdom**

The United Kingdom employs about 255 000 teaching assistants at a cost of over £4 billion a year (or 10 per cent of the education budget). Evidence suggested that they made little difference on average to the attainment of students. But the effects varied between classrooms. In classrooms where teachers and assistants worked collaboratively together the effects were positive. In classrooms where the assistant substituted for the teacher rather than complementing them, students, particularly those from disadvantaged backgrounds, tended to perform worse than peers taught only by a teacher.

Since 2011, the Education Endowment Foundation has run six randomised controlled trials testing the impact of giving teaching assistants quality support and training in delivering structured sessions to small groups or individuals. The results showed that students of the trained teaching assistants made three to four months more progress than students whose assistants were deployed as usual. At relatively little additional cost, teaching assistants who are used effectively can have a marked impact on student learning.

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## **Action is required to improve evidence creation and use**

Although there is a large body of education evidence, the body of high-quality evidence relating to the Australian context is very small. Australia needs to invest, particularly in randomised controlled trials, to build the Australian evidence base on what works best to improve education outcomes.

### **High-quality evidence needs to be created**

#### **Cooperative policy leadership is important**

Implementation of high-quality research requires cooperative policy leadership by the Australian and state and territory governments. COAG has already recognised the need for cooperative leadership. In the 2013 National Educational Reform Agreement, governments agreed to work together to develop, publish and disseminate evidence on what works best in schools, including by researching, sharing and evaluating improvement and innovation strategies. This agreement needs to translate into action.

#### **Strategically guided research**

National research priorities are used in other sectors in Australia. In vocational education and training (VET) the first national research strategy was published in 1997 to ensure the findings of VET research and evaluation can help various stakeholders in the VET system make better decisions, to improve the quality and effectiveness of training. Research funding allocations are still guided by these national research priorities. Similarly, in housing, research priorities guide the research program administered by the government funded Australian Housing and Urban Research Institute.

The Commission supports the development of research priorities in school and early childhood education and care.

#### **Commissioning high-quality research**

A rigorous process should be adopted for project selection, including the provision of guidelines to applicants about the nature of research that will be considered. The guidelines should require assessment of initiatives' cost effectiveness. The choice of research projects to build the evidence about what works best to improve outcomes also needs to be prioritised on the basis of cost effectiveness.

#### **Verifying the quality of the research**

A range of processes can be used to ensure the findings from completed research are robust. These include independent validation of the findings, peer review of research,

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publication of all outputs (irrespective of findings) to enable scrutiny and debate, and the provision of project data for secondary analysis.

Research commissioning bodies in other sectors in Australia, like the National Centre for Vocational Education and Training and the Australian Housing and Urban Research Institute use some of these processes.

Verification should extend to ensuring that research findings from small scale trials apply when initiatives are scaled up.

### Developing capacity in quality research

The limited research activity on what works best to improve outcomes in the Australian context suggests that Australia will need to foster research capacity in high-quality education research. Strategies should be put in place to build this capacity.

## Applying high-quality evidence

### Disseminating research findings

In order for research to impact decision makers in the education system, findings have to be disseminated (distilled and communicated) effectively. Vast quantities of information are available through the internet. Identifying high-quality research and the key findings from that work is a challenge for many decision makers. To address this, a central repository of trusted, high-quality evidence, including resources to support practitioners, is needed.

The US Institute of Education Sciences manages a repository of this type — the What Works Clearinghouse. The Clearinghouse reviews research on policies, programs, practices and products in education. High-quality evidence is summarised in effectiveness ratings for different interventions and practice guides.

The Commission supports a central clearinghouse for high-quality guidelines and advice for education professionals.

### Evidence must influence practice

Simply creating evidence and making it available to education professionals is not enough. Evidence only leads to improved education outcomes if it is used to inform decision making and changes the behaviour of practitioners.

Internationally, concerns that evidence does not sufficiently impact decision making has prompted research on how to mobilise knowledge and translate evidence into policy and practice. In 2014, for example, the UK Government allocated £1 million to the Education Endowment Foundation for research into how high-quality evidence is most effectively

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translated into changes in the classroom. Similarly, in the United States, the Carnegie Foundation is investing in ways of improving the use of, and culture of using, evidence in education settings.

Research effort needs to be focused on how evidence can most effectively be translated into changes in practice in Australia. Better understanding of what works best to improve research impact will likely have widespread implications for the way researchers communicate their findings, educators are trained, the professional development of educators during their careers, and how education policy is designed. It will also help ensure that spending on both education and education research is cost-effective and efficient.

## **Governance and institutional arrangements matter**

The framework set out above for further developing a national education evidence base is not the end of the journey. Effective governance and institutional arrangements are important to create strong incentives for delivery on the goals.

Such arrangements do this by ensuring that responsibility for the functions and tasks associated with implementing the framework are clearly assigned, thereby promoting accountability. The discussion here relates to the bottom-up framework. Effective arrangements, undertaken by ACARA, for top-down monitoring are already in place.

## **The Australian, state and territory governments should lead the way**

The Australian, state and territory governments should take a shared and cooperative approach to policy leadership to get the greatest benefits possible from implementation of the framework for a national education evidence base. All governments should agree to drive the implementation of the framework.

## **A new Education Agreement is needed**

In Australia's federated system, the funding and delivery of education services are dispersed between the tiers of government. It is important, therefore, that all governments commit to implementation. This could be demonstrated through a new national Education Agreement, which would build on prior agreements. In doing so, governments should apply principles for good governance (box 2).

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## Box 2 Principles of good governance

### *Accountability and responsibility*

Accountability is achieved when decision makers are assigned functions and held responsible for their decisions and actions and submit themselves to external scrutiny. It is important that all parties have clearly defined roles and a clear understanding of their responsibilities.

Governments can contribute to improved accountability by:

- setting clear policy objectives
- providing policy guidelines and defining the functions of the agency or entity responsible for delivering on the national education evidence base framework.

### *Transparency*

Transparency is required so that the community can determine whether they have confidence in the decisions and actions taken by governments and public sector agencies in relation to the national education evidence framework. Transparency is already an important element of the recent reforms to education, including Smarter Schools National Partnerships, National Curriculum, National Assessment Program for Literacy and Numeracy, and MySchool.

### *Capability*

Government entities require appropriate resourcing and capability to carry out their functions effectively (this includes financial resources and suitably skilled staff).

Through a new agreement, the Australian, state and territory governments should provide explicit policy direction defining the:

- objectives
- nature of the research to be undertaken in the bottom-up evaluation of what works
- evidentiary standards or frameworks to be applied, including assessment of cost effectiveness
- translation of evidence into guidelines accessible by schools, early childhood education and care services and teachers.

The Australian, state and territory governments should also request the Education Council to:

- assign an institution to be responsible and accountable for implementation of the functions set out above and in Draft Recommendation 7.2
- specify the assigned institution's governance arrangements, functions and operations
  - including a responsibility for promoting a culture of using the evidence base by policy makers and educators.

The Australian, state and territory governments would collectively own or oversee, and resource the assigned institution, ensuring that it has the capability to undertake its functions.

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## Proposed institutional design and functions

The Commission is proposing a governance and institutional framework drawing on those observed internationally, including the UK Education Endowment Foundation and the US Institute of Education Sciences. The proposed governance arrangements of the bottom-up institutional role are as follows.

- The institution would be accountable to, but operate at arm's length from, the Education Council (all education ministers).
- It would be an independent statutory authority or company (or contained within one).
- It would have an independent board, with board members appointed by the Education Council through a transparent selection process.
- It would enable direct involvement by non-government schools and ECEC services.
- The Education Council would have veto power in the selection of research projects, but would use this transparently.

The institution would be responsible for the following functions:

- selection and funding of proposals for evaluation, through competitive tendering
- commissioning independent reviews of research findings
- ensuring required standards of evidence are maintained in evaluations and reviews
- translating research findings into guidelines and sharing them with schools, ECEC services, teachers and policy makers
- supporting knowledge mobilisation and encouraging teaching professionals, schools, teacher training institutions and policy makers to use the evidence to inform their decisions
- keeping researchers informed about potentially useful administrative and other datasets.

The institution would operate with open and transparent processes, including:

- publishing its work
- consulting on research priorities and methods of operation
- releasing data from evaluations, for secondary analysis by other researchers.

The institution would not do research or evaluation on its own account. It would run a competitive process to award grants to others who put forward proposals that pass guidelines. Research proposals could come from diverse sources, such as schools, ECEC services, research institutes, local governments, community and charitable organisations. The institution would also contract others to do independent and rigorous reviews of the research.

These institutional arrangements could leverage the work of other research institutions (such as university institutes and Social Ventures Australia).



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The Commission has identified three broad options as to where the institution might be ‘housed’:

- incorporating it into an existing institution
- creating a separate government owned institution
- creating a new, privately run institution through a competitive tender process, similar to the way in which the UK Education Endowment Foundation was established.

Each of these options is likely to have strengths and weaknesses. Some key considerations in assessing these options include the level of independence from governments and their departments (including the potential for ‘de-politicising’ the evaluation process), the scope for operational efficiencies, and the capacity to leverage funding by other research institutions. With respect to the option of incorporation into an existing institution, consideration would have to be given to the changes required to the charter and governance arrangements of that organisation.

The Commission is seeking further information about the strengths and weaknesses of its proposed institutional and governance arrangements.



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# Draft recommendations, findings and information requests

## DRAFT FINDING 1.1

Notwithstanding substantial increases in expenditure on education over the past decade, national and international assessments of student achievement in Australia show little improvement and in some areas standards have dropped.

## DRAFT RECOMMENDATION 2.1

In supporting the further development of a national education evidence base, governments should be guided by the following principles.

The national education evidence base should:

- meet the varied needs of decision makers at all levels of the education system
- provide high-quality data and evidence to inform decisions
- drive improved student achievement through four interconnected processes — monitoring of performance, evaluation of what works best, dissemination of evidence and application of that evidence by educators and policy makers
- generate benefits in excess of the costs incurred in collecting and processing data and in creating, sharing and using evidence.

## DRAFT FINDING 2.1

National level data play a key role in top-down monitoring, benchmarking and accountability processes, but are insufficient to achieve improved outcomes. They need to be complemented by a bottom-up approach that generates evidence about what works best, for whom and in what circumstances.

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#### DRAFT RECOMMENDATION 3.1

In assessing whether to improve the quality of existing education data, governments should examine whether:

- there is a need to improve the quality of the data so it is fit for purpose
- data quality improvements are feasible given the context of data collection
- other options are available
- the benefits of improving data quality exceed the costs.

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#### INFORMATION REQUEST 3.1

*The Commission seeks comment on whether the Australian Early Development Census could be used to monitor progress against Australia's early learning objectives.*

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#### DRAFT RECOMMENDATION 3.2

The Australian Government should request and sufficiently fund the agencies that conduct the *Longitudinal Study of Australian Children* and the *Longitudinal Study of Indigenous Children* to establish new cohorts of children at regular intervals.

#### DRAFT FINDING 3.1

Ongoing initiatives should help to fill many of the identified data gaps.

- The Australian Government's proposal for a national Year 1 assessment should help to better assess performance of early school skills and to identify students who need early intervention.
- Work by the Australian Curriculum, Assessment and Reporting Authority, the Victorian Curriculum and Assessment Authority and relevant research institutes should help to improve methods and metrics for measuring non-cognitive outcomes.
- The *Nationally Consistent Collection of Data on School Students with Disability* should help to improve the monitoring of outcomes of students with disability.
- The development of a national minimum teacher dataset by the Australian Institute for Teaching and School Leadership should help to support workforce planning and assessment of initial teacher education.

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#### DRAFT RECOMMENDATION 3.3

Australian, state and territory governments should support greater use of value-added measures of education outcomes.

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#### INFORMATION REQUEST 4.1

*The Commission seeks further information on:*

- *the costs and benefits of moving toward a national student identifier (compared to jurisdictional systems)*
- *the feasibility of using the unique student identifier system used in the vocational education and training sector to deliver more comprehensive student coverage*
- *the costs and benefits of children in the early childhood education and care sector being covered by the same identifier as school students.*

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#### DRAFT RECOMMENDATION 4.1

Agencies responsible for collecting education data should review and adjust their procedures to reduce the administration costs and the compliance burden on respondents, including by:

- to the greatest extent possible, collecting sample, rather than census data
- removing duplication in data collection and processing
- avoiding frequent changes to reporting requirements, but when changes are necessary, allowing sufficient time for respondents to comply with the new requirements.

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#### DRAFT FINDING 5.1

There is a considerable amount of education and other relevant data already collected, but there are impediments to its access and use.

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#### INFORMATION REQUEST 5.1

*The Commission invites participants to comment on the operation of the section 95 guidelines in health research and lessons for other forms of research including education.*

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DRAFT RECOMMENDATION 5.1

Agencies responsible for education data collections should amend their processes for collecting personal information from parents/guardians to incorporate formal consent and notification procedures regarding the use and disclosure of personal information at the initial point of collection.

DRAFT RECOMMENDATION 5.2

The Australian Government should amend the *Privacy Act 1998* (Cwlth) to extend the arrangements relating to the collection, use or disclosure of personal information without consent in the area of health and medical research to cover public interest research more generally.

DRAFT RECOMMENDATION 5.3

The ACT Government should enact in its privacy law an exception to cover public interest research. In Western Australia and South Australia where there is not a legislated privacy regime, their privacy arrangements should reflect a similar public interest research exception.

DRAFT RECOMMENDATION 5.4

The Australian, state and territory governments should pursue legislative consistency in education and related Acts regulating the use and disclosure of education information, and amend legislation so that it is aligned with the intent of general privacy laws.

DRAFT RECOMMENDATION 5.5

The Australian, state and territory governments should introduce policy guidelines which place the onus on data custodians to share data unless a privacy (or other) exception can be justified.

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INFORMATION REQUEST 5.2

*The Commission invites participants to comment on the operation of mutual recognition in the health area and any lessons it provides for education research.*

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DRAFT FINDING 6.1

The system of data linkage could be improved if linked data were retained by the linking authority.

DRAFT RECOMMENDATION 7.1

The Australian, state and territory governments should ensure that an online metadata repository for education data collections is created. The approach used by the Australian Institute of Health and Welfare could serve as a model.

DRAFT RECOMMENDATION 7.2

The Australian, state and territory governments should pursue a national policy effort to develop a high-quality and relevant Australian evidence base about what works best to improve school and early childhood education outcomes. In particular, five activities need to be supported:

- development of research priorities
- commissioning of high-quality education research
- adoption of rigorous research quality control processes
- dissemination of high-quality evidence
- development of researcher capacity.

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#### DRAFT RECOMMENDATION 8.1

The Australian, state and territory governments should task the COAG Education Council to provide explicit policy direction through a new Education Agreement, which would build on prior agreements and define the:

- objectives
- nature of the research to be undertaken in the bottom-up evaluation of what works
- evidentiary standards or frameworks to be applied, including assessment of cost effectiveness
- requirement for translation of evidence into guidelines accessible by schools, early childhood education and care services and teachers.

They should also request the Education Council to:

- assign an institution to be responsible and accountable for implementation of the functions set out above and in Draft Recommendation 7.2
- specify the assigned institution's governance arrangements, functions and operations
  - including a responsibility for promoting a culture of using the evidence base by policy makers and educators.

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#### INFORMATION REQUEST 8.1

*The Commission seeks further information about the strengths and weaknesses of its proposed institutional and governance arrangements.*

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# 1 About this inquiry

## Key points

- Early childhood development and school education policy bear on the wellbeing and quality of life of young Australians as well as on the capabilities and productivity of Australia's future labour force.
- Notwithstanding substantial increases in expenditure on education over the past decade, Australia's performance on international assessments has stagnated, as measured by national assessments of school performance.
- An evidence-based approach to education policy and teaching practices is essential for improving the performance of the education system, and for gaining the most value from Australia's substantial investment in education.
- Early childhood education and care (ECEC) and school education in Australia are characterised by shared national objectives and considerable diversity among schools and ECEC providers. For example, schools and ECEC providers differ in terms of size, location, sector and management type, the nature of services they provide and the communities they serve.
- This report considers the data collections needed and how they are used to establish an evidence base, taking into account the diversity in service providers and in Australia's youth as well as the costs and benefits of different options.
- The focus of this inquiry is on developing an education evidence-based policy capability and embedding evidence-based decision making in education policies, programs and practices. However, the Commission is not reviewing the education evidence base itself. Judgments or analyses about 'what works best' in education practice are beyond the scope of this inquiry.

This chapter sets out the context for the inquiry, what the Commission was asked to do and how the inquiry was conducted. To frame the goals of a national education evidence base capability, the chapter outlines Australia's early childhood education and care (ECEC) and school education policy objectives. It also highlights the characteristics of the education sector that affect the development of an effective evidence base.

## 1.1 Background and contextual information

Australia's education system plays a vital role in developing the human capital and social wellbeing of the country. Transformation of the economy requires higher levels of education, as jobs with lower education and skills requirements fall both as a proportion and in absolute terms (PC 2013b). Education also makes an essential contribution to young Australians' economic and social wellbeing and quality of life, and to reducing the effects

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of socioeconomic disadvantage (MCEETYA 2008). The value of early learning, beyond its utility in supporting parents' workforce participation, has similarly been recognised (ECA 2016a; PC 2014; Sylva et al. 2010).

On average, Australians are becoming more highly educated. In the decade to 2015, school retention to Year 12 increased by nearly 10 percentage points (ABS 2008, 2016e), and the proportion of Australians aged 25–64 years with a bachelor's degree or higher qualification increased from 23 per cent to 31 per cent (ABS 2015b). However, equipping young Australians for active participation in an increasingly complex global economy and society requires more than just increasing education attainment (years and qualifications). It also calls for raising education achievement, so that all children and young people have the skills, knowledge and attributes they need to be successful in life and work. This includes improving achievement in key capabilities such as literacy, numeracy, science and technology (Masters 2016).

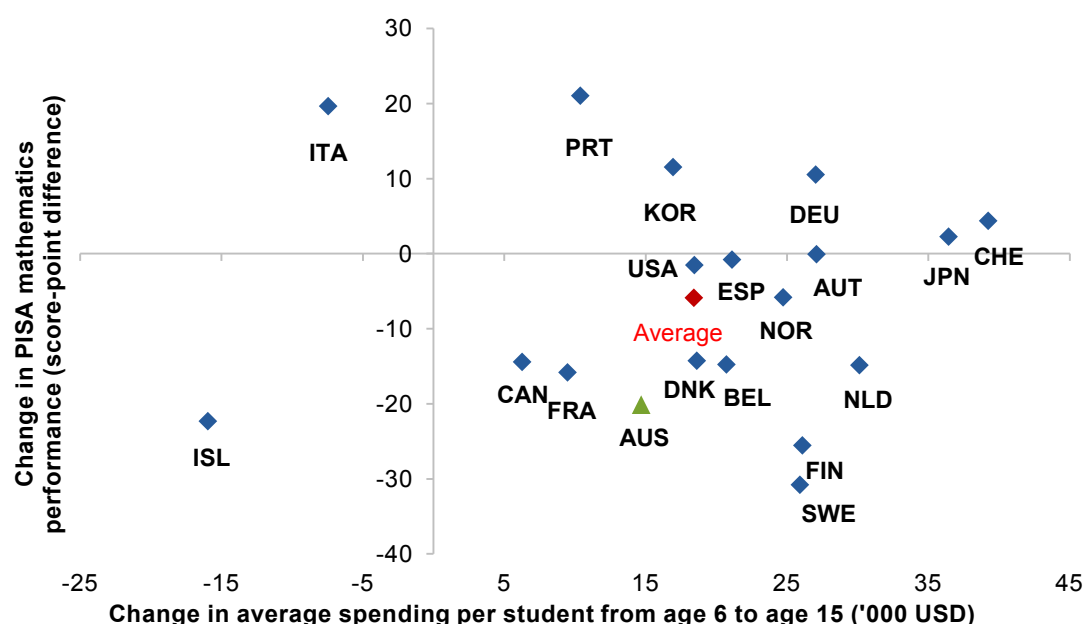
Recognising this challenge, Australian governments have committed to national education goals that emphasise the importance of excellence and equity in Australia's education system (MCEETYA 2008). In seeking to achieve these goals, Australian governments — like those in other developed nations — have increased investment in education and implemented large-scale education reforms with a focus on 'test-based accountability', transparency and reporting against national standards (DEEWR 2010, p. 3). The aim has been to drive increased competition between schools, as a means of achieving improvements in school quality and hence, gains in education outcomes. Reforms have included the introduction of a national curriculum, the National Assessment Program — Literacy and Numeracy (NAPLAN), My School, and the Smarter Schools National Partnerships (DEEWR 2010).

However, while Australia continues to have a robust education system, there are indications that further work is needed. There has been a 24 per cent real increase in overall government recurrent expenditure on schools between 2004-05 and 2013-14 (almost 14 per cent per student across government and non-government schools) (SCRGSP 2016a). Despite this increase in expenditure, Australia's performance on national and international student assessments has stalled or, in some cases, declined. Australian students' mathematical literacy and reading performance, as measured by the Programme for International Student Assessment (PISA), dropped by 29 points and 16 points, respectively, between 2000 and 2012 (Masters 2016). NAPLAN measures of Australian students' reading and numeracy achievement indicate little improvement between 2008 and 2015 (ACARA 2015d, pp. 258–300). Also of concern are early childhood development metrics that show that one-fifth of Australian children are developmentally vulnerable when they begin full-time schooling (DET 2016h, p. 5).

Australia is not alone in facing these challenges. Many OECD countries have substantially increased their expenditure on education since 2000, without commensurate improvement in education achievement (Barber and Mourshed 2007). Yet this increased investment has not translated into improved performance on international student assessments. For

example, increased expenditure by OECD countries on students aged 6 to 15 years does not appear to be reflected in increased PISA mathematics scores (figure 1.1).

**Figure 1.1 Change in average cumulative per-student expenditure<sup>a</sup> and change in PISA mathematics performance<sup>b</sup>**  
2003 to 2012, selected OECD countries<sup>c</sup>



<sup>a</sup> Change in cumulative expenditure by education institutions per student from age 6 to age 15 years, in equivalent US dollars converted using purchasing power parities. <sup>b</sup> Score-point difference on the mathematics component of the Programme for International Student Assessment of 15-year-olds. <sup>c</sup> Countries included: Australia (AUS), Austria (AUT), Belgium (BEL), Canada (CAN), Denmark (DNK), Finland (FIN), France (FRA), Germany (DEU), Iceland (ISL), Italy (ITA), Japan (JPN), Korea (KOR), Netherlands (NLD), Norway (NOR), Portugal (PRT), Spain (ESP), Sweden (SWE), Switzerland (CHE), United States (USA).

Data source: OECD (2013a).

Such trends have prompted a growing recognition, both in Australia and overseas, that ‘excellence in education requires more than money’ (OECD 2013a, p. 42). There is now broad agreement that monitoring, benchmarking and accountability alone, are insufficient to achieve gains in education outcomes. These processes must be complemented by the use of data and evidence to identify and implement the most effective programs, policies and practices. This will help to allocate resources more effectively and improve outcomes with respect to national education objectives. This report seeks to address the challenge of how to support the generation of evidence about what works best in education, and the application of this evidence to support informed decision making.

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#### DRAFT FINDING 1.1

Notwithstanding substantial increases in expenditure on education over the past decade, national and international assessments of student achievement in Australia show little improvement and in some areas standards have dropped.

## Education in Australia is a shared responsibility

Education in Australia is a shared responsibility. ECEC and school education are generally delivered by state, territory and local governments and the non-government sector. Funding is provided by the Australian, state and territory governments and family contributions. Reflecting this, education policy is developed and implemented through co-operation between the Australian, state and territory governments, under the auspices of the Council of Australian Governments (COAG) and the Education Council (all education ministers). Chapter 8 gives a more detailed discussion of these institutional arrangements and responsibilities.

The past decade has seen increasing co-operation between the Australian, state and territory governments to develop shared education objectives, policy frameworks and partnerships. This has included the development of:

- the *Melbourne Declaration on Educational Goals for Young Australians* (MCEETYA 2008) (box 1.1)
- the *National Education Agreement* (COAG 2009b) and *National Education Reform Agreement* (COAG 2013) (box 1.2)
- the Smarter Schools National Partnerships and School Performance Improvement Frameworks Project (DEEWR 2010)
- a national curriculum for schools, the *Australian Curriculum*, and national assessment and reporting programs for student and school performance (ACARA 2012)
- national quality standards and regulations for ECEC services, the *National Quality Framework for Early Childhood Education and Care* (National Quality Framework, NQF) (ACECQA 2013b).

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### Box 1.1      **Shared policy objectives — Melbourne Declaration**

The *Melbourne Declaration on Educational Goals for Young Australians* (Melbourne Declaration), endorsed by all Australian education ministers in 2008, sets out two overarching goals for school and early childhood education and care.

#### **Goal 1: Australian schooling promotes equity and excellence**

This goal aims for all young Australians to have access to education that is:

- equitable — including reducing the disparity in education outcomes between Indigenous and non-Indigenous children and young people, and reducing the effect of socioeconomic and other sources of disadvantage on education outcomes
- high-quality — including providing challenging learning experiences that enable all children and young people to fulfil their individual potential.

#### **Goal 2: All young Australians become successful learners, confident and creative individuals and active and informed citizens**

This goal aims for all young Australians to become:

- successful learners — including having essential skills in literacy, numeracy and information and communications technology, and capabilities such as problem solving and collaboration
- confident and creative individuals — including maintaining physical and emotional wellbeing, and developing the knowledge, skills and values needed to lead healthy, satisfying lives
- active and informed citizens — including the capacity and commitment to participate in civic life, to appreciate diversity and to relate well cross-culturally.

Source: MCEETYA (2008).

## Early childhood education and care

Responsibility for ECEC is shared between the Australian, state and territory governments. In addition to parent contributions, government funding for childcare is almost entirely provided by the Australian Government, whereas preschool services are funded by a mixture of Australian, state and territory government contributions (SCRGSP 2016a).

State and territory governments provide legislative and regulatory frameworks for ECEC services in their jurisdiction. Their responsibilities vary by jurisdiction, but generally include:

- providing preschool services
- approving or licensing, monitoring, assessing and rating ECEC services under the NQF
- licensing or registering services not approved under the NQF (SCRGSP 2016a).

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## Box 1.2      **Shared policy objectives — national education agreements**

The *National Education Agreement* and *National Education Reform Agreement* were endorsed by the Australian, state and territory governments through the Council of Australian Governments (COAG) in 2009 and 2013 respectively. These agreements set out general objectives (which they term ‘outcomes’) and ‘COAG Targets’.

### **Objectives of the agreements**

The *National Education Agreement* (COAG 2009b) aims for Australian schooling to provide a high-quality and equitable education for all students, so that:

- all children and young people are engaged in and benefiting from schooling
- children and young people are meeting basic literacy and numeracy standards, and overall levels of literacy and numeracy achievement are improving
- Australian students excel by international standards
- schooling promotes social inclusion and reduces educational disadvantage in children and young people, especially Indigenous Australians
- young people make a successful transition from school to work and further study.

The *National Education Reform Agreement* (COAG 2013) presents similar objectives.

### **COAG Targets**

The *National Education Agreement* and *National Education Reform Agreement* also present the specific objectives (‘targets’) to:

- lift the Year 12 (or equivalent) or Certificate II attainment rate to 90 per cent by 2015
- lift the Year 12 (or equivalent) or Certificate III attainment rate to 90 per cent by 2020
- at least halve the gap for Indigenous students in Year 12 (or equivalent) attainment rates by 2020, from the 2006 baseline
- halve the gap for Indigenous students in reading, writing and numeracy by 2018, from the 2008 baseline.

In addition to these, the *National Education Reform Agreement* presents objectives (‘targets’) with respect to Australia’s international performance. These aim for Australia to:

- be placed in the top 5 countries internationally in reading, mathematics and science by 2025
- be considered to have a high-quality and high-equity school system by international standards by 2025.

In 2014-15, the Australian, state and territory governments spent a combined \$8.6 billion on ECEC services (recurrent and capital expenditure). This consisted of:

- Australian government expenditure of \$7.1 billion (excluding funding provided to states and territories for universal access to preschool services)
- State and territory government expenditure of \$1.5 billion, of which \$1.4 billion was spent on preschool services (and includes the universal access funding provided by the Australian Government) (SCRGSP 2016a, p. 3.5).

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The Australian Government also funds the Australian Early Development Census (AEDC), a triennial national census of the developmental outcomes of children in the first year of full-time schooling, at about \$28 million per collection cycle (Brinkman et al. 2014, p. 1090).

## Schools

The Australian, state and territory governments share policy responsibility for school education, but services are delivered by state and territory governments and non-government providers. State and territory governments' responsibilities include:

- ensuring that all school-aged children have the opportunity to enrol in a safe, supportive school providing a high-quality education
- ensuring that all children of compulsory school age attend school
- developing policy, delivering services, regulating schools, and monitoring and reviewing the performance of individual schools
- the regulatory framework for all schools (government and non-government), including registration and accreditation, school quality and performance in education outcomes
- implementing the national curriculum
- administering government schools (COAG 2009b).

Government schools are primarily funded by the state and territory governments, but also receive Australian government funding. Non-government schools receive most of their public funding from the Australian Government, with the remainder sourced from private fees and fundraising (SCRGSP 2016a).

In 2015-16, total Australian government school education-related funding was approximately \$16.3 billion, almost all of which consisted of school funding under the *Students First* program (which sets out current Australian government policy directions in school education) (Treasury 2016b, p. 12). Almost \$9.9 billion of school funding was paid to non-government schools (Treasury 2016b, p. 29).

In the 2016-17 Budget, the Australian Government announced an additional \$118 million in funding for students with disability between 2016 and 2018, targeted to schools identified as being in greatest need (Treasury 2016a, p. 80). It has also allocated an additional \$1.2 billion in school funding to occur between 2018 and 2020, contingent on state and territory governments and non-government schools implementing 'evidence-based initiatives' aimed at improving education outcomes (box 1.3).

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### Box 1.3      **Reforms tied to increased Australian government school funding**

Under the 2016-17 Budget, additional funding of \$1.2 billion from 2018 to 2020 will be tied to a needs-based distribution of funding and a range of school reforms aimed at improving education outcomes.

Among the evidence-based initiatives tied to the funding increase are:

- standardised testing of Year 1 students' reading, phonics and numeracy skills
- annual reports to parents identifying students' literacy and numeracy attainment against national standards
- recruitment targets for teachers qualified in science, technology, engineering or mathematics subjects
- teacher salary progression to be linked to demonstrated competency and achievement against the Australian Professional Standards for Teachers, rather than just length of service.

Source: Birmingham (2016).

The following two subsections provide overviews of ECEC and school education in Australia, in terms of their objectives and characteristics that may affect the development of a robust and effective evidence base.

## **Early childhood education and care**

The ECEC sector in Australia is diverse, encompassing many different types of services, providers and settings. Broadly, formal ECEC includes childcare and preschool services, defined in this report as follows:

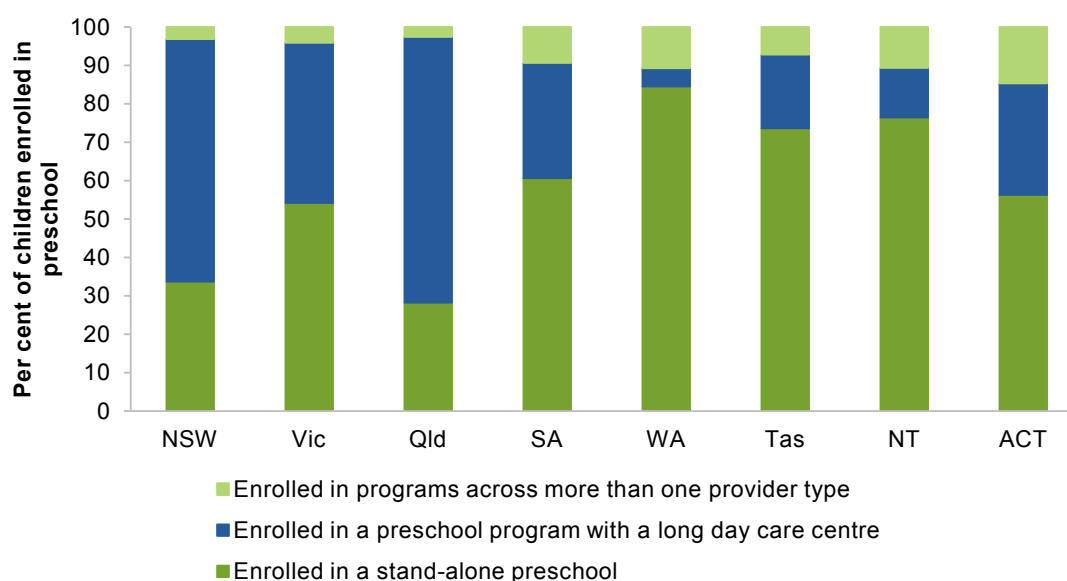
- 'childcare' refers to formal childcare services provided to children aged 0–12 years, which include long day care, family day care, outside school hours care, occasional care and other care (SCRGSP 2016a)
- 'preschool' is defined as a structured, play-based learning program delivered to children by a degree-qualified early childhood teacher, mainly in the year or two before children begin full-time schooling. Preschool programs are delivered in a variety of settings, including stand-alone preschools, long day care centres and co-located with schools (ABS 2016b).

Participation in ECEC services is voluntary. Some children do not participate in any ECEC services, while others may attend multiple services, or move between different services and provider types. Of the approximately 300 000 children attending preschool in 2015, almost half were enrolled in a preschool program within a long day care centre, and about 5 per cent were enrolled in programs across more than one service provider type (ABS 2016c), though this varies across states and territories (figure 1.2).



ECEC providers vary considerably in size and in the number of services they operate. As at the end of 2015, more than 15 000 ECEC services were operating across Australia, representing over 7400 NQF-approved providers (ACECQA 2016, p. 4). Most (83 per cent) ECEC providers are ‘small’, operating only one ECEC service. ECEC providers also vary in management type, such as private for-profit, community-managed or local government-managed providers (ACECQA 2016, p. 7). The complexity of children’s participation in ECEC, and the diversity of services and providers, have implications for the costs of collection, processing, administration and use of education data and evidence (chapter 4). The division of responsibilities between multiple levels of government can also pose challenges for collecting consistent and comparable data on children’s participation in ECEC services. Issues relating to data quality are discussed in chapter 3, while issues regarding data sharing and access are examined in chapter 5.

**Figure 1.2 Children enrolled in a preschool program in the year before full-time school, 2015**  
By jurisdiction and provider type<sup>a,b</sup>



<sup>a</sup> Excludes children aged 5 years old who were enrolled in preschool in the previous year as a 4 year old.

<sup>b</sup> Care needs to be taken when interpreting Queensland child counts as there may be some duplication of children across different provider types. This is due to the inclusion of child aggregate data from some service providers.

Data source: ABS (*Preschool Education, Australia, 2015*, Cat. no. 4240.0).

## Objectives of early childhood education and care

‘Early learning’ refers to children’s physical, cognitive, linguistic, social and emotional development and learning from birth to five years. Early learning occurs in both formal ECEC settings and informal settings, such as the home environment and community

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playgroups (ECA 2016a). ECEC services aim to support children's development, learning and quality of life in the present as well as forming a foundation for later learning in the school years and beyond (DEEWR 2009a). Research indicates that early childhood development is an important predictor of children's future education outcomes, as well as their behaviour, health and wellbeing in later life (DET 2016h). Children's development and learning in ECEC can assist in explaining subsequent school outcomes, but are also important outcomes in their own right (box 1.4).

**Box 1.4      'Care' and 'education' in early childhood education and care**

A distinction is sometimes made between the 'care' and 'education' roles of early childhood education and care (ECEC) services, usually along the lines of viewing childcare services as mainly providing care and preschool services as mainly for promoting children's development and learning. This distinction has likely arisen because the childcare system was developed mainly to support parents' workforce participation, whereas preschool programs have generally been developed to support children's development and learning (PwC 2011).

However, the inclusion of both childcare and preschool under the rubric of ECEC, as reflected in national ECEC policy documents, can be seen as a recognition that the two roles are interconnected — 'that learning is a part of every child's development from birth' (McMeniman 2008, p. 12).

Neither the *National Quality Framework* (ACECQA 2013b) nor the *Early Years Learning Framework* (DEEWR 2009a) distinguish between childcare and preschool services in their standards and guidelines for service providers. The *Early Years Learning Framework* aims to ensure 'that children in all early childhood education and care settings experience quality teaching and learning' (DEEWR 2009a, p. 5). In light of this, children's development and learning through participation in both childcare and preschool are considered to be 'education outcomes' in their own right (for the purpose of this inquiry) as well as predictors of subsequent school outcomes.

Recognising the importance of early learning for children's present and future outcomes, all Australian governments have agreed to a number of policy objectives for early childhood, including ECEC services (box 1.5). These objectives aim for young children to:

- enjoy good physical, social and emotional health and wellbeing
- develop knowledge and skills for life and later learning, including cognitive and language skills as well as non-cognitive capabilities (COAG 2009a; DEEWR 2009a).

Governments have also committed to the objective that all Australian children have access to affordable, quality early childhood education in the year prior to full-time schooling — defined as a program delivered by a qualified early childhood teacher for 15 hours per week or 600 hours per year (COAG 2009c, 2016).

The health-related objectives for ECEC also underline the importance of generating data and evidence on factors outside the education system that affect children's development and learning.

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## Box 1.5 Policy objectives — early childhood education and care

### ***National Early Childhood Development Strategy***

Developed by Australian, state and territory governments through the Council of Australian Governments, the Strategy emphasises the importance of children's early years for long-term individual and national outcomes. It has the objectives (or desired outcomes) that all children:

- are born and remain healthy
- are in environments that are nurturing, culturally appropriate and safe
- have the knowledge and skills for life and learning
- benefit from better social inclusion and reduced disadvantage, especially Indigenous children
- are engaged in and benefiting from educational opportunities.

### ***National Partnership Agreement on Universal Access to Early Childhood Education***

The objective of the Agreement (continuing the work of the earlier *National Partnership Agreement on Early Childhood Education*) is for all Australian children to have access to affordable, quality early childhood education in the year before formal schooling ('universal access'). Specifically, this refers to a program delivered by a qualified early childhood teacher for 15 hours per week or 600 hours per year. There is a particular emphasis on access by vulnerable and disadvantaged children and Indigenous Australian children, including those living in remote communities.

### ***Early Years Learning Framework***

The Framework guides early childhood education and care providers in supporting children's learning. It sets out five learning objectives:

- children have a strong sense of identity
- children are connected with and contribute to their world
- children have a strong sense of wellbeing
- children are confident and involved learners
- children are effective communicators.

Sources: COAG (2009a, 2009c, 2016); DEEWR (2009a).

## **School education**

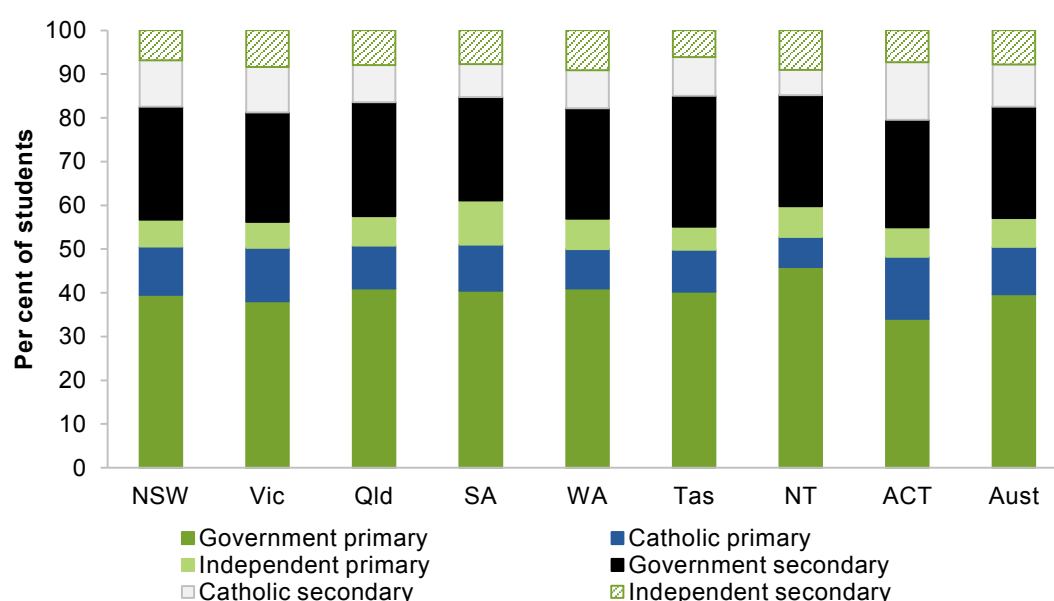
Full-time schooling in Australia consists of primary and secondary education from Foundation Year to Year 12, with compulsory attendance to Year 10 and voluntary attendance in Years 11 and 12 (ABS 2016e).<sup>1</sup> Nationally in 2015, approximately

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<sup>1</sup> States and territories differ in the names given to preschool and the first year of full-time schooling (the year before Year 1), as well as the respective starting ages for these stages in education. For consistency,

3.75 million students were enrolled in primary, secondary and special education schools across Australia. Of these students, about 65 per cent were enrolled in government schools, with the remainder in Catholic schools (20 per cent) and independent schools (almost 15 per cent) (figure 1.3).

**Figure 1.3 Students enrolled in Australian schools, 2015**  
By jurisdiction and sector



Data source: ABS (*Schools, Australia, 2015*, Cat. no. 4221.0).

As in the ECEC sector, schools in Australia are diverse: they vary greatly in terms of characteristics such as enrolment size, affiliation, geographic location, resources and facilities, and also differ in the demographics of the families and communities they serve. For example, beyond a minimum set of state and territory regulatory requirements, Catholic and independent schools operate largely autonomously from governments (DPMC 2014). Most Catholic schools are systemic schools, owned by the Catholic Church in Australia and operated by Catholic Education offices in each state and territory, whereas most independent schools are non-systemic, being governed and operated on an individual basis (Buckingham and Jha 2016; PC 2012). Many independent schools are also small, with 38 per cent having fewer than 200 students, and 11 per cent of these having fewer than 50 students (ISCA, sub. 39).

This diversity has implications for the resources available to individual schools and groups of schools in relation to collecting, processing and using education data and evidence. For example, the autonomy, size and remoteness of many independent schools can affect the

this report uses the terms ‘preschool’ and ‘Foundation Year’ (or ‘the first year of full-time school’), with the latter following the Australian Curriculum terminology (ACARA 2015g).

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resources available to meet government requirements relating to education data and evidence. Remoteness of schools more generally (government or non-government) can also drive differences in schools' resourcing, capacity and capabilities with respect to the technical demands of data collection and administration. These issues are considered further in chapter 4.

## Objectives of school education

All Australian governments have agreed that Australia's education system should provide high-quality, equitable school education for all Australian children and young people, with the aim of equipping them for effective social and economic participation and promoting their quality of life. Governments have committed to a set of objectives that seek to improve education participation, attainment and achievement for all children and young people. They also seek to reduce disparities in outcomes between groups (for example, between Indigenous and non-Indigenous children and young people) (as set out in the shared policy objectives in boxes 1.1 and 1.2).

## 1.2 What the Commission has been asked to do

The Australian Government has asked the Commission to investigate the development of a national education evidence base. The Commission's task has been to consider the case for, and specific nature of, a national evidence base for ECEC and school education, for use in informing policy development and improving education outcomes.

In accordance with the terms of reference, the Commission has evaluated and made recommendations on:

- the information required to provide a comprehensive evidence base to inform policy development in early learning and school education. This includes consideration of current data holdings at a national, state and sectoral level, and their effectiveness in supporting education outcomes
- new information that would add value to the evidence base, such as non-cognitive skills and information on employment, health, social services, early childhood and higher education
- addressing barriers to the sharing of education (and other relevant) data
- factors that inhibit access to and use of data to support analysis and evidence-based policy development
- the role that technology and mobile devices can play in influencing the scope, quality and timeliness of data collection and reporting
- the costs and benefits of options for improvements to the national education evidence base, including the administrative and financial impacts on schools and ECEC providers, and opportunities for efficiencies in data collection.

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## 1.3 Scope of the inquiry

This inquiry encompasses data and evidence relating to education outcomes for children and young people from birth to the end of secondary schooling (typically, age 18 years). (Some key terms used in this report are set out in box 1.6.) The issues paper sought confirmation of the appropriate scope of this inquiry in relation to outcomes for children aged under four years, as well as factors outside the education system that impact upon education outcomes. Inquiry participants supported both of these as being in scope, emphasising the crucial influence of early learning on children's outcomes in later life, as well as the relevance of factors outside the education system, such as health and socioeconomic background. The Commission's discussion of the education evidence base includes both of these aspects.

### Box 1.6 Report terminology

In this report:

- **'child'** or **'children'** are generally used in the context of participation in early childhood education and care
- **'student'** or **'students'** are generally used in the context of school education
- **'children and young people'** or **'young Australians'** are used as umbrella terms to refer to all individuals aged 0–18 years, when referring to early childhood and school education together.

Further:

- **'objectives'** refers to the goals (or *desired* outcomes) that an education policy, framework or program seeks to achieve
- **'outcomes'** refers to what is achieved in practice, against the stated objectives. (In instances where official documents have used 'outcomes' to denote policy goals, this report will refer to such goals as 'objectives')
- **'influences'** refers to the range of factors that affect education outcomes
- **'measures'** refers to specific, observable indicators of outcomes or of influences.

For example, a national *objective* for school education might be that all young people are literate and numerate. The relevant *outcome* in this case would be the actual literacy and numeracy levels achieved by a given population group, sub-population group, school or individual student. *Influences* on this outcome (at an individual student level) could include the student's attendance at school and the quality of the student's home learning environment. *Measures* of these influences could be the student's number of school absences in the past year, and the number of books in the student's home, respectively.

For the purposes of this report, consideration of the evidence base does not extend beyond the end of secondary schooling. Several submissions noted the relevance of school-related evidence to student destination, but the terms of reference limit this inquiry to consideration of the evidence base for early childhood and school education. However, the framework set out in this draft report for guiding the further development of the education

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evidence base is based on a general set of principles, and so could potentially be extended to post-school education.

The focus of this inquiry is on developing an evidence-based policy capability and embedding evidence-based decision making in education policies, programs and practices. However, it is important to note that the Commission is not reviewing the education evidence base itself. Judgments or analyses about ‘what works best’ in education practice are beyond the scope of this inquiry.

## **Evolving views since the issues paper**

The issues paper for this inquiry had a strong focus on matters relating to education data (particularly national-level data) rather than on the use of this data to generate evidence about effectiveness in education practices. The Commission’s thinking has developed further since the release of the issues paper through the Commission’s consultative process. It recognises that although data collection and processing are important themes in this inquiry, creating and using robust evidence must be the central aim of any attempt to use data to improve education outcomes (as discussed in chapter 2).

## **1.4 The Commission’s approach**

The overarching goal of this inquiry is to identify ways to strengthen Australia’s capacity for using evidence to improve education outcomes.

As discussed in this chapter, all Australian governments have developed and endorsed shared policy objectives for ECEC and school education, and have implemented a range of initiatives aimed at achieving these objectives. However, there has been a growing recognition that these initiatives, and increases in overall funding, have not achieved substantial gains in education outcomes in recent years. This has prompted increased interest in the further development and use of an evidence-based approach to improving outcomes. Yet, without an overarching framework to guide this further development, there is a risk that efforts to strengthen the national evidence base capability may not meet the needs of decision makers in the most cost-effective manner.

To address this policy challenge, the Commission has sought to:

- examine the nature and role of an effective education evidence base, including how data are used to generate evidence and how evidence is communicated and used to inform decision making across the education system
- consider existing education data and evidence, and identify gaps in the evidence base
- identify impediments to furthering the evidence base, and consider ways to overcome these impediments

- 
- assess relevant costs and benefits associated with any suggested changes in the collection and administration of education data, and the generation and use of education evidence
  - identify priority areas for reform, and institutional and governance arrangements best suited to advance an evidence-based capability.

In doing so, the Commission has adopted an analytical framework based on a set of key principles for guiding further development of the evidence base. This framework has been used to identify and analyse a range of issues, including:

- gaps in existing data collections, including issues relating to the quality or characteristics of the data
- barriers or impediments to accessing and using existing data to generate useful evidence
- barriers or impediments to effective use of education evidence by decision makers.

Following identification of these gaps, barriers and impediments, the framework is used to assess options for improving Australia's education evidence base capability. These options are focused on:

- limiting the administrative burden of data collection, processing and management
- harnessing efficiency gains, including through the use of technology
- maximising the usefulness and impact of existing data and evidence, by addressing barriers to access, sharing and linkage
- gaining the most value from rigorous evaluation and assessment of 'what works best' in schools and ECEC services. This could be achieved by translating data into meaningful, relevant and robust evidence and using this evidence to inform practices — ranging from teacher training to classroom instructional methods
- the policy, institutional and governance settings, as well as cultural environments, that will enable effective implementation.

The Commission's analysis takes into consideration a range of evidence from Australia and overseas. This includes the analysis and findings of previous reviews and research, international experiences and practices, and information and views from a broad range of stakeholders.



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## 1.5 Conduct of the inquiry

Following receipt of the inquiry terms of reference in March 2016, and the release of an issues paper in April 2016, the Commission has engaged widely with stakeholders through meetings and public submissions (appendix A). The Commission received 80 submissions prior to the release of this draft inquiry report. Inquiry participants have represented diverse areas of Australia's education system, and have included Australian, state and territory and local governments, independent authorities, academics and research organisations, and peak industry organisations for schools and ECEC services.

Continued public participation is encouraged through post-draft submissions, which should be provided to the Commission by **7 October 2016** for consideration in the final report. Participants will also have an opportunity to comment on the draft report at public hearings, which will be held in Melbourne on **18 October 2016** and in Sydney on **20 October 2016**. Further locations may be advised.

A final inquiry report will be prepared and provided to the Australian Government by **9 December 2016**.

## 1.6 A guide to the report

The remainder of this report is organised as follows.

- Chapter 2 sets out a framework for guiding the further development of the national education evidence base.
- Chapter 3 provides an overview of the current education data and evidence and assesses the gaps in the evidence base.
- Chapter 4 considers issues associated with data collection and processing.
- Chapters 5 and 6 focus on issues associated with managing data access and linkage, while meeting privacy and other legislative requirements.
- Chapter 7 addresses the challenges of creating and using evidence, with a focus on improving research and analytical capability and capacity to distil, disseminate and apply evidence to improve education outcomes.
- Chapter 8 assesses the institutional and governance arrangements needed for an effective education evidence base capability.
- Appendix A provides details of public consultation undertaken for this inquiry.
- Appendix B gives further detail about data quality issues, data gaps, gaps in evidence and its creation and use, as identified by inquiry participants.
- Appendix C takes stock of the main education data collections and evidence, and data on external influences.



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## 2 A framework for furthering the education evidence base

### Key points

- An effective education evidence base supports decision makers at all levels of the education system (including national, jurisdictional, school, early childhood education and care (ECEC) service, and teacher levels) to make informed choices about programs, policies and practices.
  - It promotes transparency and accountability by those responsible for policy formulation and practice in schools and ECEC services.
  - It assists policy makers and providers to understand what works best in ECEC and school education, and how to disseminate and apply this evidence in schools and ECEC services.
- A national education evidence base is broader than a single national data repository. It should be a broad system of information that is flexible to meet the needs of decision makers at all levels (tiers) of the education system.
  - A central data warehouse or national data repository will not best meet all needs.
- A national education evidence base requires two key capabilities.
  - A ‘top-down’ capability, for monitoring, benchmarking and assessing the performance of the education system at all levels (jurisdictions, schools and ECEC services) in achieving the stated objectives, promoting transparency and accountability and informing resource allocation. However, on its own, a top-down approach is insufficient to drive improvements in education outcomes.
  - A ‘bottom-up’ capability uses data to evaluate effectiveness of education policies, programs and teaching practices. This enables systematic identification and implementation of ways to improve outcomes in schools and ECEC services.
- An education evidence-based capability should support a cycle of improvement in outcomes (with respect to Australia’s education objectives), consisting of four processes:
  - monitoring (tracking progress against objectives)
  - evaluation (assessing efficacy and value for money of policies, programs and practices)
  - dissemination (sharing evidence in a form that decision makers can use)
  - application (using evidence to inform decisions about policies, programs and practices).
- The evidence base should provide decision makers with data and evidence that are of high quality for their needs (fit for purpose).
- Data and evidence should generate net benefits (benefits in excess of the costs incurred in collecting and processing data, and creating, sharing and using evidence).

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Outlined in this chapter is a framework to assess the requirements for a national education evidence-based capability. It sets out the roles of an education evidence base, the features of an effective education evidence base and the processes by which data and evidence can most effectively support the policy objectives of governments regarding the education system.

## 2.1 What is a national education evidence base?

In any policy area, relevant, accessible, high-quality evidence is vital for enabling decision makers at all levels of a system to take effective action to support their objectives (ABS 2010; Banks 2009b). In education, an effective evidence base supports the monitoring of progress against education objectives, the identification and diagnosis of problem areas, and the development of ways to improve ECEC and school education outcomes. It is also essential for promoting transparency and accountability by those responsible for policy formulation and its implementation in schools and ECEC services.

An effective national education evidence base is more than a simple accumulation of data in a single collection or data ‘warehouse’. As highlighted in chapter 1, the education sector is diverse and the need for evidence occurs at many levels. Data and evidence are used by decision makers across the education system, including:

- children and young people and their families
- schools and ECEC providers, and their teachers and other staff
- teacher educators
- governments at all levels — Australian, state and territory, and local
- the wider community.

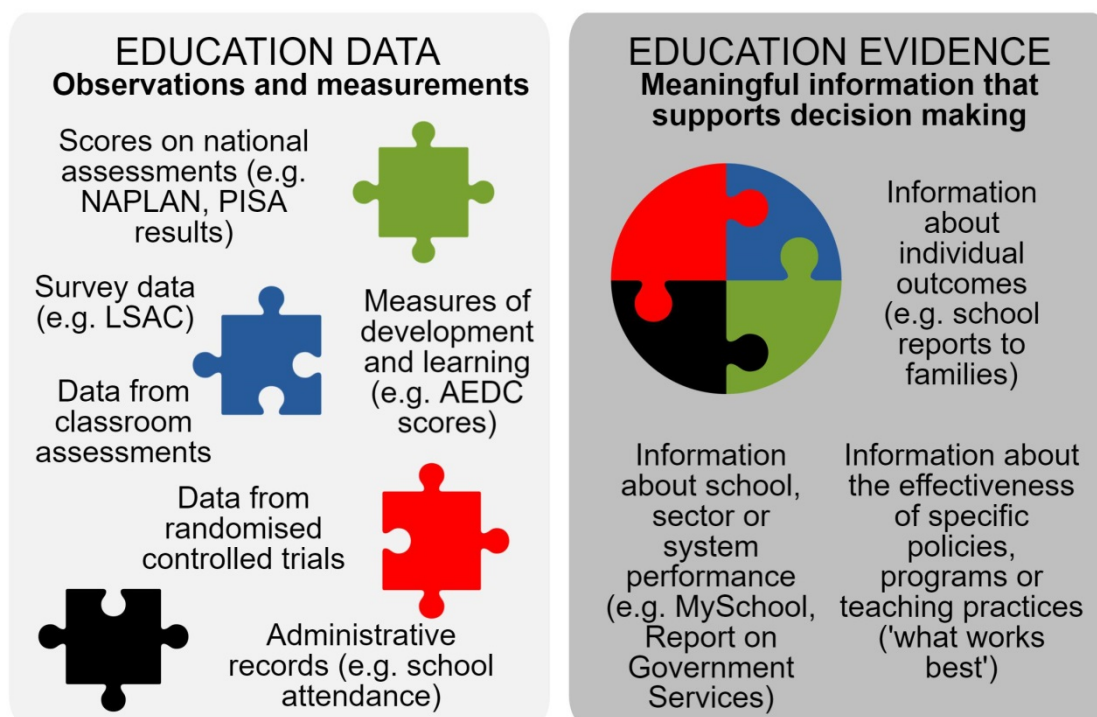
Consequently, a ‘big data’ holding or national data repository will not best meet all needs. Further, relevant data for an education evidence base are not restricted to the education system itself, and data linkage across sectors is expected to become increasingly important.

### Distinguishing data and evidence

Education data and education evidence are distinct but related concepts (figure 2.1).

Data are measurements or observations about a person or entity (such as an education setting), collected as a source of information (ABS 2013). Accordingly, **education data** are measurements or observations that are collected to provide information about education outcomes and the factors influencing these outcomes. Education data, collectively, include all data holdings that have been collected within, and in relation to, the education system, including ECEC and school education.

Figure 2.1 Distinguishing between data and evidence



Education data can come from diverse sources, ranging from larger-scale processes such as surveys and standardised tests to school-based assessments and administrative systems, and smaller-scale sources such as randomised controlled trials. Two key sources of data are:

- **research datasets**, which are readily accessible for researchers to use in answering specific research questions
- **administrative records**, which are mainly collected for administrative purposes and require further processing in order to be usable for research purposes (ABS 2013).

Data may take the form of:

- **census data**, which are collected for everyone or everything in a population of interest
- **sample data**, which are collected for a representative sample of a population of interest (ABS 2013).

Relevant, high-quality data are a fundamental building block in the creation of evidence. However, data are a means to an end and not an end in itself.

**Education evidence** is generated when education data are turned into useful information through rigorous analysis, which can then be used to inform decision making. Education evidence can take different forms, including:

- 
- information about individual progress against education objectives, such as that contained in school reports to families or preschool transition reports
  - information about the quality of programs provided by ECEC services, such as that provided by the Australian Children’s Education and Care Quality Authority through its National Quality Standard rating system (ACECQA 2013c)
  - information about the performance of the broader education sector, such as that reported in the Report on Government Services (SCRGSP 2016a)
  - information about the impact and effectiveness of specific programs or teaching practices (‘what works best’), such as analyses that result from randomised controlled trials.

The **education evidence base** refers collectively to the education evidence available to inform decision making by all those involved in the education system, and the underlying data used to generate this evidence. A key theme of this report, and one endorsed by many inquiry participants, is that data only have value for informing decisions if they can be and are transformed into meaningful information that can be used to inform decision making. For example, Speech Pathology Australia (sub. 35, p. 12) submitted that:

The drawing together of relevant data items on its own will not lead directly to improved policy and planning an[d] outcomes for students – it is merely pre-requisite for this to occur. ... For data to be an ‘evidence base’ it requires both drawing together of relevant data *AND* the use/promotion of this data in everyday practice by end users.

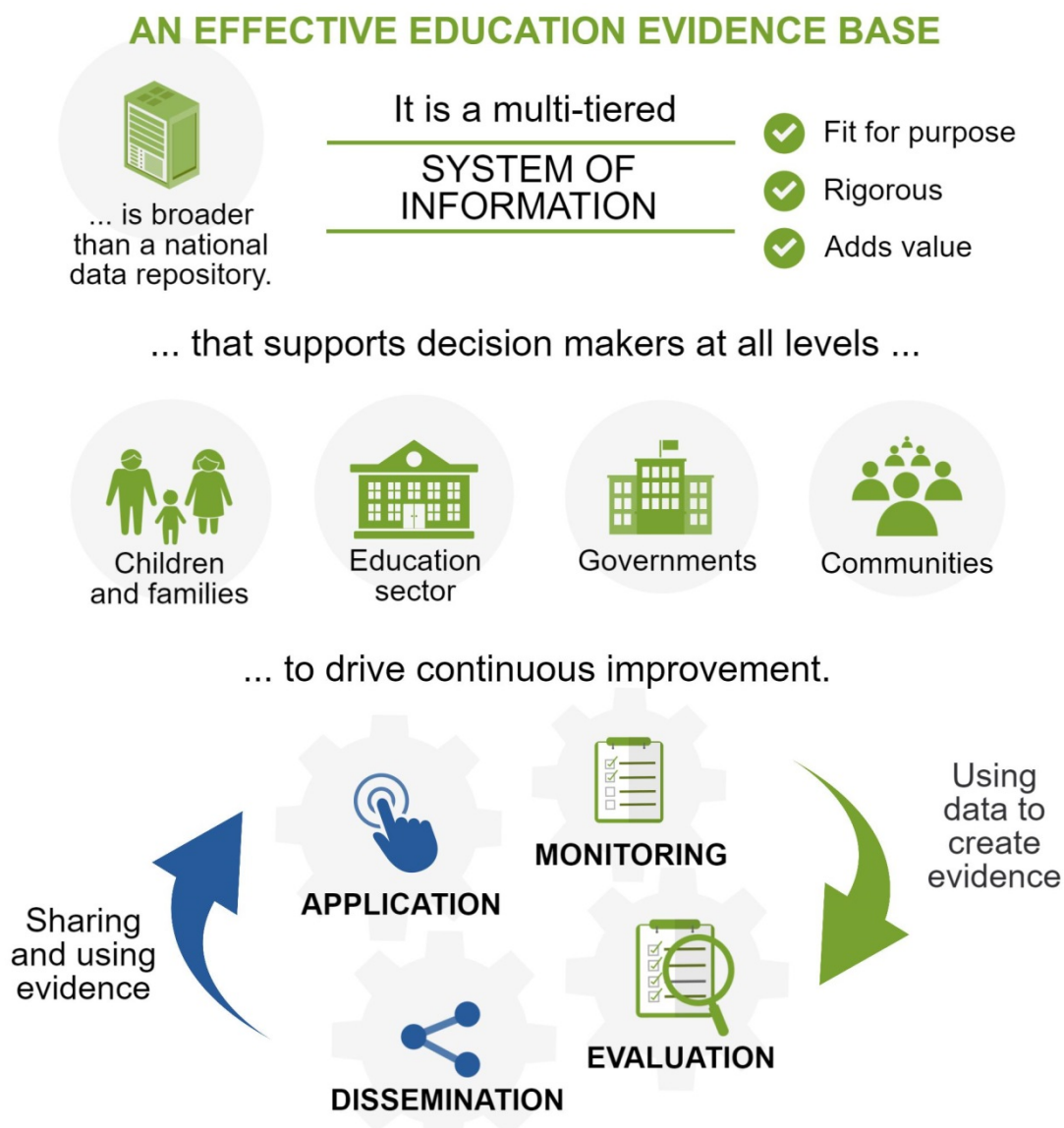
The focus of this inquiry is on the education evidence base, including approaches to enabling evidence-based decision making in education policies, programs and practices. However, as noted in chapter 1, the Commission is not reviewing the education evidence base itself or making judgments about effective practices.

## **A framework for further developing a national education evidence base**

Outlined in figure 2.2 is a framework for assessing the requirements for an education evidence-based capability, based on a set of key principles (box 2.1) and encompassing both top-down and bottom-up approaches.

Throughout this report, the framework described in this chapter is used to guide the assessment of the design and elements of a national education evidence base. The overarching themes discussed in this chapter are: the importance of evidence-based decision making in education, the need for a tiered system of information that meets the diverse needs of decision makers, and the vital role of bottom-up evaluation of effectiveness in education practices. These underpin the perspective taken on the many and varied range of issues relevant to the national evidence base.

Figure 2.2 **A framework to guide the further development of a national education evidence base**



The framework guides the identification and analysis of current issues, including:

- gaps in existing data collections, including issues relating to the quality or characteristics of the data (chapter 3)
- barriers or impediments to accessing and using existing data to generate useful evidence (chapters 4, 5 and 6)
- barriers or impediments to effective use of education evidence by decision makers (chapter 7).

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## **Box 2.1      Key principles for guiding the further development of a national education evidence base**

### **Principle 1**

A national evidence base should be a broad system of information that meets the varied needs of decision makers at all levels (tiers) of the education system.

### **Principle 2**

It should provide decision makers with data and evidence of a suitable quality to be useful and reliable in informing judgments.

### **Principle 3**

It should support a cycle of improvement in education outcomes (with respect to stated system objectives), through four interconnected processes:

- monitoring (tracking progress against objectives)
- evaluation (assessing efficacy and value for money of policies, programs and practices)
- dissemination (distilling and communicating evidence in a form that is usable for decision making, such as developing guidelines that can be applied by schools and teachers)
- application (using evidence to inform decisions about policies, programs and practices).

### **Principle 4**

It should generate net value (in excess of the costs incurred in collecting and processing data, and creating, sharing and using evidence).

Following identification of these gaps, barriers and impediments, the framework is used as a basis for assessing options for improving Australia's education evidence base capability. These options are focused on:

- limiting the costs arising from the administrative burden of data collection, processing and management
- harnessing efficiency gains, including through the use of technology
- maximising the usefulness and impact of existing data and evidence, by addressing barriers to access, sharing and linkage
- gaining the most value from rigorous evaluation and assessment of 'what works best' in schools and ECEC services. This could be achieved by translating data into meaningful, relevant and robust evidence and using this evidence to inform practices — ranging from teacher training to classroom instructional methods
- the policy, institutional and governance settings and cultural environments that will enable these options to be implemented most effectively.



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#### DRAFT RECOMMENDATION 2.1

In supporting the further development of a national education evidence base, governments should be guided by the following principles.

The national education evidence base should:

- meet the varied needs of decision makers at all levels of the education system
- provide high-quality data and evidence to inform decisions
- drive improved student achievement through four interconnected processes — monitoring of performance, evaluation of what works best, dissemination of evidence and application of evidence by educators and policy makers
- generate benefits in excess of the costs incurred in collecting and processing data and in creating, sharing and using evidence.

## 2.2 A top-down approach: monitoring, benchmarking and accountability

There are two complementary and distinct approaches that can be used to support Australia's progress towards national education objectives (set out in chapter 1):

- a 'top-down' approach, based on monitoring and benchmarking the performance of ECEC and school education in achieving stated policy objectives. This can occur at a national or jurisdictional level (for example, My School and statewide Australian Early Development Census results respectively) as well as at sub-jurisdictional levels (such as at an individual school or classroom level)
- a 'bottom-up' approach, based on evaluation of ways to improve education outcomes. By nature, this tends to focus on the school and classroom level, and on creating and using evidence to inform education policy and practice.

The need for both approaches has been recognised by Australian governments:

All governments recognise that the collection, provision and publication of data on student outcomes and school performance is essential for public accountability. (COAG 2009b, p. 8)

It is generally recognised that student and school performance as measured by external tests can provide consistent approaches to analysing student outcomes. ... [At the same time, r]ecent reforms in Australia appear to herald a transition toward a more holistic approach to school performance and improvement. ... Australian jurisdictions have begun examining the characteristics of schools which are performing well and demonstrating continuous improvement, within a range of contexts. (DEEWR 2010, pp. 5–6)

The purpose of top-down monitoring and benchmarking is to use data to track outcomes systematically with respect to stated objectives and to inform all stakeholders about the extent of progress, achievement and the use of resources within the education system

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(Fakharzadeh 2016). This approach has been used in Australia and other developed countries with the aim of driving improved outcomes through increased transparency, accountability, and competition. It has been the impetus behind key education reforms over the past decade:

Competition between schools combined with test-based accountability on predetermined knowledge standards has become a common approach. ... National reforms — particularly the *Smarter Schools National Partnerships* and *National Curriculum, National Assessment Program for Literacy and Numeracy* and *MySchool* — are driving a stronger emphasis on outcomes, targets, accountability and transparency in reporting, reflected in reforms across the developed world. (DEEWR 2010, p. 3)

Monitoring and benchmarking promote transparency and accountability around how the education system has performed in light of the resources invested in it, as well as guide resource allocation. Monitoring is an essential first stage in an evidence-based approach to improving education outcomes. Without good measures of progress towards stated objectives — and benchmarks against which to interpret this progress — it is not possible to robustly assess the efficacy and cost-effectiveness of policy interventions or school programs. That is, monitoring complements, and is a precursor to, effective evaluation (discussed in section 2.3).

Monitoring and benchmarking emphasise the use of national-level data, such as data from a census or a sample of a given national-level population. Such data collections have the advantage of ensuring that monitoring is done on a nationally consistent basis, enabling comparative performance assessment across schools, jurisdictions and sub-population groups. National-level data collections can also be used to follow children and young people across ECEC services and schools, including between different service types (such as movements between government and non-government schools).<sup>2</sup>

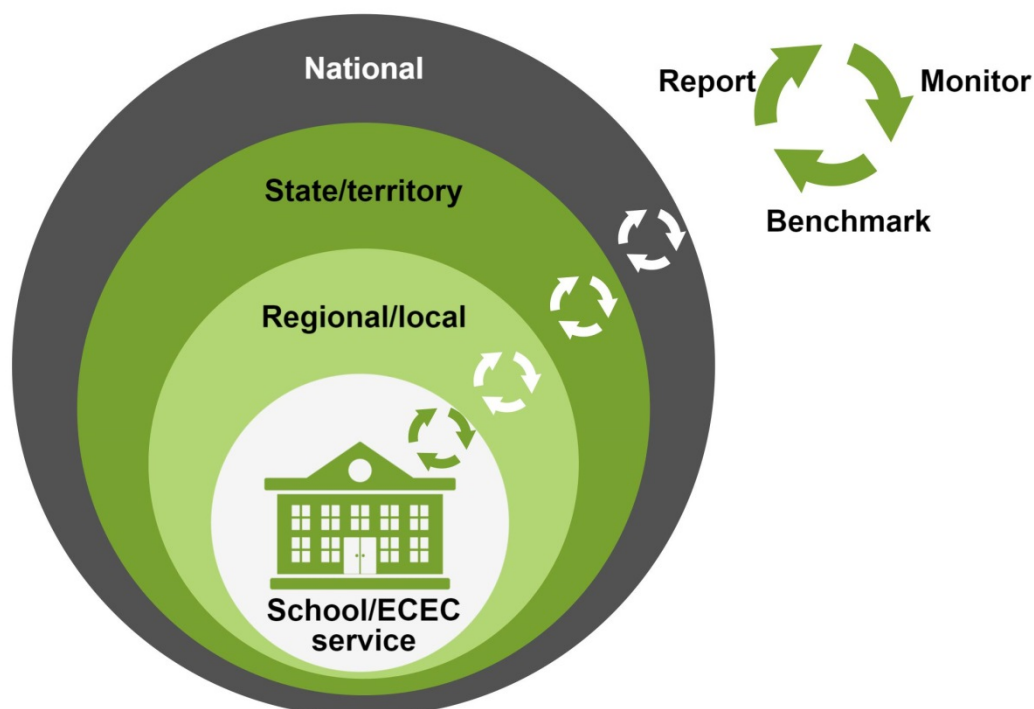
National-level data and evidence can be used in a ‘tiered’ manner by decision makers at different levels of the education system. For example, data collected through national surveys or assessments can be used to identify problems and inform planning and decision making at a jurisdictional, regional, school or ECEC service level. At every level, decision makers use relevant data to track progress, assess and interpret measured outcomes against appropriate benchmarks, and then to report progress to stakeholders. This cycle of monitoring, benchmarking and accountability is depicted in figure 2.3.

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<sup>2</sup> Options for tracking children and young people across different parts of the education system, such as the use of unique student identifiers, are canvassed in subsequent chapters.

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Figure 2.3     **Monitoring at each level of the education system**



Source: Adapted and modified from Grattan Institute (sub. 61).

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### **Information requirements for a top-down approach**

Effective monitoring and performance benchmarking requires information on:

- a broad range of education outcomes
- appropriate benchmarks to interpret measured outcomes
- factors influencing education outcomes
- outcomes at different levels of the education system
- how outcomes have changed over time.

Each of these is discussed in turn below.

#### **A broad range of outcomes**

In ECEC and school education, Australia has national education objectives that relate to cognitive as well as non-cognitive skills and attributes (chapter 1). A national education evidence base therefore should be able to provide information and evidence on young

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Australians' progress across all developmental and learning domains — cognitive and non-cognitive — rather than only in traditional academic areas.

Collecting data on cognitive outcomes is relatively straightforward. The challenge lies with data on non-cognitive outcomes, which by their nature do not readily lend themselves to measurement. Non-cognitive education outcomes include capabilities and attributes such as collaboration, persistence and self-control. They may also include aspects of social and emotional health and wellbeing.

However, to be incorporated into an evidence base, these non-cognitive outcomes must be translated into specific measures. This will generally require additional work in defining the desired skills and knowledge and how these may be observed and assessed in practice. Gaps in data and evidence relating to non-cognitive outcomes are discussed further in chapter 3.

### Benchmarking measures of success

The evidence base should provide both absolute and relative measures of young Australians' progress. This means incorporating information about education outcomes with respect to national standards, as well as information on the gains made by individual children and young people over time.

Measuring outcomes with respect to common standards gives decision makers a consistent reference point for interpretation — whether it be families reading their child's school report, or government departments assessing the performance of schools in their jurisdiction. Reporting against national benchmarks supports assessment of Australia's progress against education objectives, such as national minimum standards for literacy and numeracy (chapter 1).

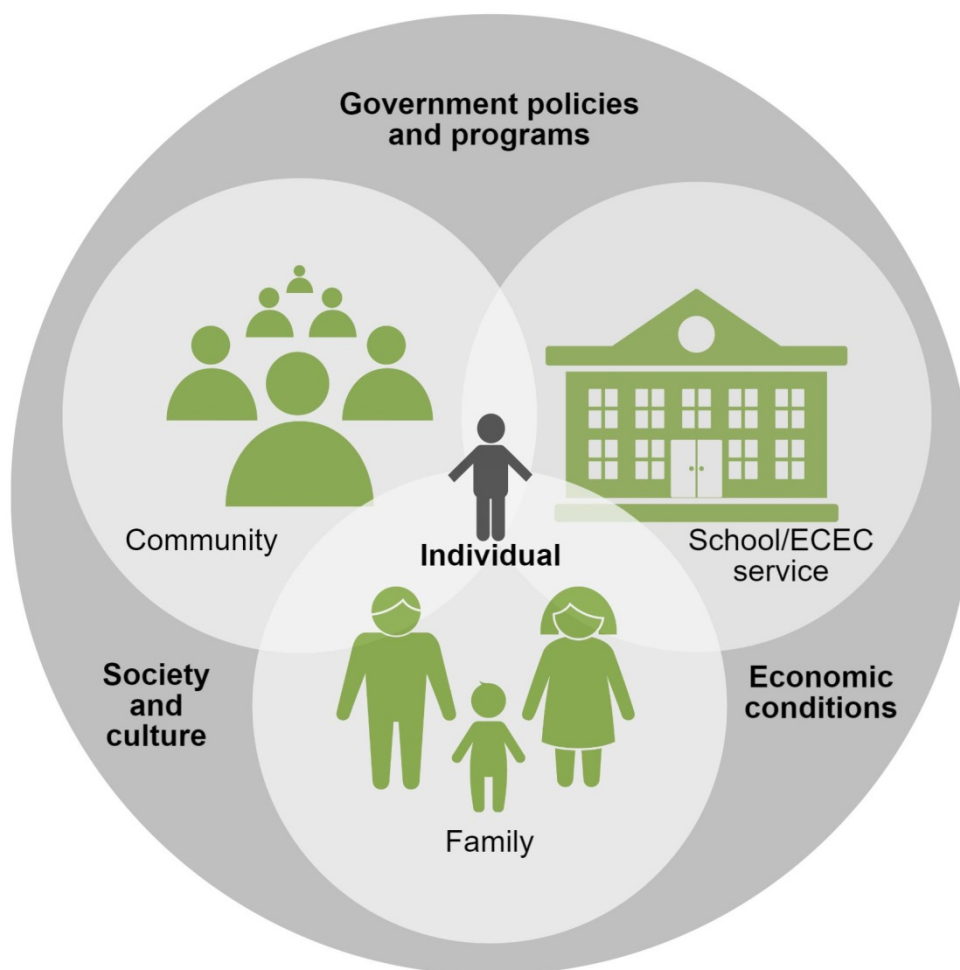
At the same time, incorporating information on individual development and learning progress within a given time period supports the Melbourne Declaration aim that education should enable all children and young people to fulfil their individual potential (MCEETYA 2008). For example, in the context of school education, the Grattan Institute (Goss and Sonnemann 2016; Grattan Institute, sub. 61) has suggested using a 'years of progress' measure of achievement, to report on the extent of an individual student's learning progress from one year to the next.

### Influences on education outcomes

The evidence base should provide information on the factors that contribute to young Australians' education outcomes. Many interrelated factors influence an individual's development and learning (figure 2.4).

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Figure 2.4    **Many interrelated factors influence education outcomes**



Source: Adapted from ARACY (2008).

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These factors can be grouped into two categories.

- *Within-system influences* are factors within the education system, such as policy settings, curricula, education programs and teaching practices.
- *External influences* affect education outcomes but are not directly manageable by the education system; for example, individuals' gender, health, Indigenous status, parents' education attainment, remoteness, and disability.

Information on within-system and external influences is necessary for contextualising the results of monitoring and benchmarking, so that outcomes can be interpreted meaningfully. For example, the My School website provides contextual information, such as schools' geographic location, enrolment size and students' socioeconomic background, to aid in interpretation and comparison of reported measures of school performance (ACARA 2016d).

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Data and evidence from sources outside education, such as the health sector, can be useful in understanding the impact of external influences. For example, information on family and socioeconomic background could be gathered from non-education data, such as from the income support or justice systems. Gaps in data and evidence relating to influences on education outcomes are discussed further in chapter 3 and impediments to accessing and using existing data collections (including issues relating to data linkage capabilities) are discussed in chapters 5 and 6.

### Information at different levels

Given Australia's education objectives and shared responsibilities for education policy (chapter 1), the evidence base should provide information on education outcomes at different levels, from individual outcomes to system-wide performance. This enables assessment of the extent to which national education objectives are being achieved in relation to young Australians overall as well as for sub-population groups (such as Indigenous children and young people). It also supports the diverse needs of decision makers throughout the education system. Families, schools, ECEC services, local and jurisdictional governments variously require information about education outcomes (and the influences on these outcomes) at multiple levels (individual, class, school or regional).

### Information about changes over time

The evidence base should incorporate information about changes over time in the outcomes of individuals, groups and system-wide performance, in order to gauge the extent of progress (or otherwise) towards education objectives. Information about changes in outcomes and influences over time is also essential for evaluating the impact of education programs and practices (as discussed in section 2.3).

An illustration of the way in which outcomes might be measured at different levels and over time is given in box 2.2.

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## Box 2.2      **Measuring outcomes at different levels and over time: an illustration**

Information on young Australians' development of language, literacy and communication skills can be used to assess progress against national education objectives relating to these areas of learning. For example:

- the early childhood education and care objective that 'children are effective communicators' (DEEWR 2009b, p. 38) might be measured using individual scores on the 'communication skills and general knowledge' component of the Australian Early Development Census (AEDC) (DET 2015b)
- the school education objective that children and young people are 'meeting basic literacy and numeracy standards' (COAG 2009b, p. 5, 2013b) might be measured using national average National Assessment Program — Literacy and Numeracy (NAPLAN) scores.

These AEDC and NAPLAN scores can meet the diverse needs of decision makers by providing information at **different levels**.

- Individual scores and average scores for a class of students are likely to be of most relevance to classroom teachers, to assist them in making decisions about how to support the literacy skills of students in their class.
- School-wide average scores would be most relevant to school leaders, to assist them in making decisions about literacy curricula, teaching practices and resource allocation.
- National average scores, and average scores for sub-population groups (such as students from low socioeconomic backgrounds) would be most relevant for state, territory and national-level government departments and agencies, for monitoring and benchmarking system-wide performance in meeting literacy objectives.

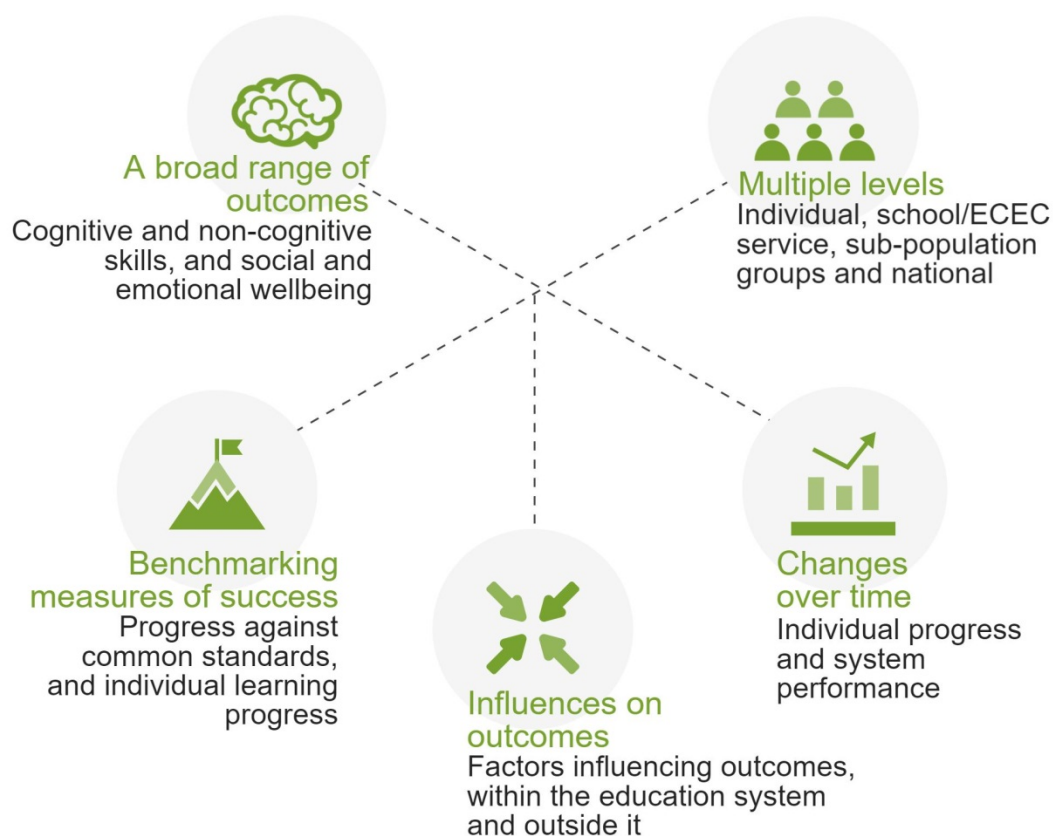
Decision makers also need information about individual and group outcomes **over time**, to understand individual progress as well as how a system has 'added value'. For example:

- by comparing a student's AEDC and Year 3 NAPLAN scores, school leaders can assess how well the school has supported that student in their first few years of schooling
- by comparing the local community's average AEDC scores over time, local governments can assess how well the community is supporting young children's development
- by examining changes in jurisdictional and national average NAPLAN scores, state and territory governments can assess the absolute and relative performance of their education systems over time.

The above requirements of the evidence base are summarised in figure 2.5. This figure highlights that although national-level data may play a key role in top-down monitoring, benchmarking and accountability processes, a national education evidence base is broader than a single repository of data and should meet the needs of all decision makers. Rather, data and evidence must be able to support decision makers at every level to track and interpret progress and report on outcomes in a way that is relevant and meaningful.

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Figure 2.5    **Information to support monitoring, benchmarking and accountability**



## 2.3    **A bottom-up approach: evaluation of ‘what works best’ in teaching and learning**

Top-down monitoring and performance benchmarking are important components of using data and evidence to improve education outcomes. These processes provide evidence about how children and young people are progressing in terms of national education objectives. However, there is a growing recognition that a top-down approach, on its own, is insufficient to achieve improved outcomes.

Over the past decade or two, education systems in Australia and many other developed nations have placed an increasing emphasis on monitoring and accountability, through national standardised assessments and public reporting of assessment results. However, the assumption that doing so will, of itself, drive improvements in outcomes (through accountability, transparency and competition) has been challenged in Australia and overseas (Barber and Mourshed 2007; Goss and Hunter 2015; OECD 2013c). The pressures of transparency and public accountability can result in adverse incentives and



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unintended consequences, unless accompanied by evidence on effective teaching practices and interventions (and the capacity and capabilities required to implement effective practices) (Barber and Mourshed 2007; OECD 2013c).

Australian and international reviews have found that many education reform efforts in developed countries, such as increasing spending and reducing class sizes, as well as increasing competition and accountability, have not achieved the desired gains in outcomes (Barber and Mourshed 2007; Goss and Hunter 2015; Hattie 2009).

Empirical evidence as to the success of this focus on accountability, within frameworks or generally on improving student outcomes, is contested. For example, significant reforms to public education in England since 1988 have included an emphasis on national curriculum, local management of schools, greater choice and diversity among schools ... However, there has been slippage in England's international rankings and the gap between high and low-performing schools and school systems remains of deep concern.

The same concerns can be found in some literature from the United States, where student outcomes have also slipped down the international rankings despite significant education spending ... (DEEWR 2010, p. 5)

Crucially, most of the variation in student outcomes, in countries such as Australia, is attributable to variation between individual students ('within-school' rather than 'between-school' variation) (Masters 2016). Evidence points to teacher quality as the key driver of this student-level variation in outcomes (Barber and Mourshed 2007). In view of this, policy makers are increasingly turning to a closer examination of the role of evaluation in identifying and implementing 'what works best' to improve outcomes and achieve learning objectives at the classroom level (OECD 2013c).

For these reasons, a top-down monitoring and benchmarking approach needs to be complemented by a bottom-up approach, which seeks to evaluate the impact and cost-effectiveness of specific programs, policies and teaching practices at a jurisdictional, school or classroom level (Fakharzadeh 2016). Evaluation generates evidence about 'what works, for whom, and in what circumstances' (Mitchell Institute, sub.31, p. 5) in education policy, programs and practices. This evidence can relate to one of many levels — at the policy level, at the level of school leadership and administration, in an individual classroom or even at the level of an individual child or young person. Evidence may relate to broad populations of learners (such as effective programs or practices for primary school mathematics) or to specific groups (such as effective policies and practices for teaching students from culturally and linguistically diverse backgrounds).

#### DRAFT FINDING 2.1

National level data play a key role in top-down monitoring, benchmarking and accountability processes, but are insufficient to achieve improved outcomes. They need to be complemented by a bottom-up approach that generates evidence about what works best, for whom and in what circumstances.

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## A four-step approach to effective evaluation

Effective evaluation requires a rigorous, systematic approach, with strategic policy direction and collaboration between researchers, schools, ECEC services and teachers. This approach has four key elements (figure 2.6):

- prioritising areas for research
- developing potential interventions for evaluation
- assessing these interventions using rigorous methods
- reporting research findings.

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Figure 2.6     **A four-step approach to effective evaluation**



Source: Adapted and modified from Grattan Institute (sub. 61).

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### Prioritising areas for research

First, evaluation requires a strategic approach to selecting areas of teaching and learning that warrant investigation. Many inquiry participants emphasised that education research should be driven by the needs and purposes of the Australian education system (for example, Mitchell Institute, sub. 31; MCRI, sub. 47; RIPPLE, sub. 45; SVA, sub. 59; United Voice, sub. 42). There may be value in a national-level research strategy for the generation of education evidence in which policy makers set explicit priorities for research

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in accordance with identified gaps in the evidence base. (Some evidence gaps are discussed in chapter 3, and strategic approaches to guiding education research are considered in chapter 7.)

### Developing potential interventions for evaluation

Second, within identified research priority areas, there should be a process to identify and/or develop promising interventions. These can include teaching practices, programs or approaches to teaching particular knowledge, skills or curriculum areas. They could also be more general practices, such as approaches to assessment or ways to engage families. Interventions could be identified from many possible sources, including from:

- looking ‘under the hood’ at the practices of high-performing schools and ECEC services. For example, this could involve analysing the practices of schools that have shown sustained improvements in student outcomes, or that have achieved higher than expected outcomes given the socioeconomic profile of the communities they serve (DEEWR 2010)
- previous academic research and reviews, such as statistical analyses of links between ECEC participation and later school outcomes
- international practices.

### Assessing these interventions for impact and cost-effectiveness

Third, interventions should be assessed rigorously, using randomised controlled trials or other robust analytical methods, as appropriate. Crucially, whichever method is chosen must be able to identify the *causal* effect of the intervention on learning outcomes, separately from the impacts of other influences. This means that evaluation, like monitoring, also requires data on within-system and external influences on outcomes, such as students’ socioeconomic backgrounds. (It may also be desirable to examine the effect of these external influences, in order to assess the need for interventions to be targeted at particular groups requiring additional support.)

Assessment of interventions should pay particular attention to isolating the effect of the selected intervention from any effect associated with the teacher and/or school that is implementing the intervention. This is essential for determining the extent to which an intervention is ‘scalable’ — whether it works across schools and ECEC services and groups of children and young people (QldDET 2016), or whether its effectiveness depends on particular school or teacher characteristics. Equally, if assessment uncovers a significant positive or negative ‘teacher effect’ or ‘school effect’, it might be worthwhile to investigate this further, in its own right. For example, if certain teacher qualities or attributes were found to significantly mediate the effectiveness of a given classroom practice for learning outcomes, this may have implications for selection into, and/or content of, teacher education programs.

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The assessment process should also incorporate analysis of the cost of implementing a given intervention. This, too, has implications for whether an effective program or teaching practice offers the best ‘value for money’ in terms of improved outcomes (QldDET 2016), and whether it would be cost-effective to implement the intervention more broadly across schools and ECEC services. This is important for ensuring efficient resource allocation both at a system-wide and school or ECEC service level, particularly given the diverse characteristics and needs of schools and ECEC services (chapter 1).

## Reporting research findings

Finally, evaluation requires that key research findings are summarised and reported to inform decisions at the classroom and school leadership level as well as to guide subsequent research. This is an important step in paving the way for the effective dissemination and application of education evidence (section 2.4).

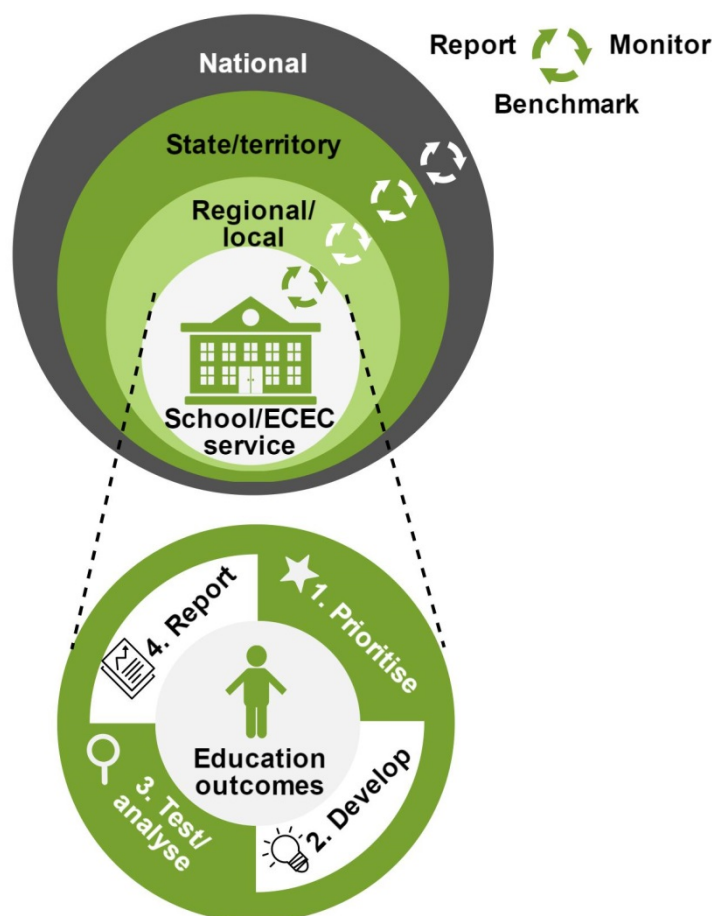
## Top-down and bottom-up approaches are complementary

An effective national education evidence base involves complementary and integrated use of top-down and bottom-up approaches (figure 2.7).

Evidence from top-down monitoring and performance benchmarking can inform the identification of research priorities for evaluation. For example, national-level data might reveal a lack of progress in particular outcomes, such as mathematics achievement in secondary schooling or emotional regulation in early childhood. This might reveal a need for additional research into effective teaching practices targeting these specific areas. This illustrates the complementary nature of the top-down and bottom-up approaches, where top-down monitoring and benchmarking can provide useful information to guide priorities for bottom-up evaluation.

Conversely, when research findings from bottom-up evaluation are used to inform classroom practices, the combined impact of these changes should be evident in top-down monitoring. For example, school leaders and teachers could use monitoring to examine overall trends and progress in student outcomes after the rollout of evidence-informed classroom practices or school-wide programs. From national and jurisdictional levels to individual schools and ECEC services, monitoring and evaluation can be used in tandem to track progress towards education objectives, diagnose problem areas, and identify effective practices for improving outcomes.

Figure 2.7 Top-down and bottom-up approaches should work together



Source: Adapted and modified from Grattan Institute (sub. 61).

## 2.4 Dissemination and application: sharing and using evidence to make a difference

Crucially, evidence can only support improved outcomes as well as transparency and accountability to the extent that it is accessed and used by relevant decision makers in the education system. Even the highest-quality evidence based on the most rigorous analysis cannot improve education outcomes if it does not find its way into classroom practices in schools and ECEC services.

This means dissemination and application of evidence are equally important processes as monitoring and evaluation. As discussed in chapter 7, these processes require a culture where the people and organisations who influence education outcomes are able to make decisions that are grounded in evidence.

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## Dissemination

Dissemination involves distilling evidence from monitoring and evaluation and communicating and sharing this evidence in a usable form with relevant decision makers, particularly teachers and school leaders. Dissemination of evidence can take a variety of forms, such as:

- the publication of information derived from monitoring, as in the quarterly National Quality Framework ‘Snapshot’ publications, which provide information on the quality ratings of ECEC services (ACECQA 2016)
- written guidelines, videos, case studies or other exemplars of evidence-informed practice in relation to a particular aspect of school education or ECEC. For example, it includes syntheses and summaries of education research on specific practices and interventions (as provided in the *Teaching and Learning Toolkit* (EEF 2016b)) and video demonstrations of effective classroom practices (as provided by the Australian Institute for Teaching and School Leadership)
- through the networks of schools and ECEC providers. For example, Early Childhood Australia provides its members (ECEC services and staff) with practice guidelines and video resources demonstrating effective practices (ECA 2016b).

## Application

Application means using evidence to implement best practices in a systematic way across schools, ECEC services and jurisdictions. Effective application of evidence requires, rather than replaces, professional judgment and depends critically upon teachers and school leaders:

- being *aware* of relevant, quality evidence that offers insight in relation to their specific needs
- being able to *analyse* this evidence to form a judgment as to whether the benefits of a program or practice are likely to be applicable to their specific local context and conditions
- being able to *adopt* and *adapt* an evidence-based program or practice successfully in their context, including by implementing any required staff training, and managing barriers to change
- being able to *evaluate* and *adjust* implementation as appropriate
- deciding whether to *embed* or *omit* (discard) the program or practice, based on the evidence of its impact and effectiveness in their specific context (SVA, sub. 59).

Evaluation may also play a role in identifying ways to support effective dissemination and application of education evidence, and overcoming barriers to implementation of evidence-informed teaching practices. Where research has identified particular programs or practices as highly effective as well as value for money, further research may be needed to

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assess how best to share and apply these research findings at the school or ECEC service level. This might involve, for example, evaluation of the efficacy and cost-effectiveness of specific forms of in-service and pre-service teacher education and professional development programs, or of different formats for communicating research findings to teachers (such as through practice guidelines, videos or online tutorials). That is, evaluation not only aids in understanding what works best to improve education outcomes, but also in identifying what works best to convert this knowledge into classroom practice. (Improving dissemination and application is discussed further in chapter 7.)

Together, monitoring and evaluation, dissemination and application of evidence form a ‘cycle of improvement’ in which data and evidence are used to continually assess and inform practice and contribute to improved outcomes (figure 2.8).

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Figure 2.8    **A cycle of improvement**



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## 2.5    Quality and fitness for purpose

Under the framework presented in this chapter, an effective education evidence base is underpinned by data that are ‘fit for purpose’ and of sufficient quality to support the generation of robust evidence.

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## Fit-for-purpose data

Fitness for purpose essentially means collecting the ‘right’ data — data that are relevant to the needs and purposes of decision makers across the education system.

Decision makers are diverse in their characteristics, with schools and ECEC providers varying greatly in terms of local needs, resources and capabilities (chapter 1). This diversity underscores the importance of having a multi-tiered education evidence base, so as to meet decision makers’ varied needs and purposes. It also implies a need for differentiation in the characteristics of education data. The ideal characteristics of data and evidence used by decision makers at one level are likely to differ from those used by other decision makers for other purposes (Mansell, James and Assessment Reform Group 2009). For example, data collected to generate evidence for informing decision making at a jurisdictional level are likely to have different requirements for timeliness and accessibility than data collected to create evidence for informing day-to-day teaching and program delivery in a school classroom or ECEC service.

## Quality of the evidence base

The quality of a national education evidence base depends on the quality of the underlying data, and on the rigour of the methods used to generate evidence from these data.

### Data quality

Many of the desirable characteristics of education data identified in the terms of reference for this inquiry, such as comprehensiveness, consistency, accessibility and timeliness, are included in the Australian Bureau of Statistics (2009) *Data Quality Framework* used to assess the quality of a data collection (box 2.3).

Under the Data Quality Framework, and reflecting the emphasis on fitness for purpose and on data as a means to an end (rather than an end in itself), the importance of these characteristics must be assessed with respect to the purposes and needs of those using the data to generate evidence. This point is taken up in chapter 3, where gaps in the quality and characteristics of data holdings are assessed from the point of view of the needs of the data users.

Coordination of information across the different components of the education system is also important for enabling decision makers to access relevant information. In particular, an evidence base should be able to coordinate data and evidence across key transitions such as individuals’ transition from ECEC to school education, from primary to secondary schooling and between the government and non-government sectors. The tracking of students across multiple education providers is discussed further in chapter 4, and issues relating to data access, sharing and linkage are examined in chapters 5 and 6.



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### Box 2.3      **Desirable characteristics of education data**

The Australian Bureau of Statistics *Data Quality Framework* presents seven key characteristics that can be used to assess the quality of a data collection. These are the:

- institutional environment — the institutional context in which the data are produced. This includes the objectivity, independence, mandate, resourcing, quality processes and confidentiality procedures of the institution or organisation producing the data
- relevance — the extent to which the data meet user needs in terms of the concept(s) measured and population(s) represented. This includes the scope and coverage of the data, classifications and statistical standards used and whether the dataset incorporates all relevant items of interest
- timeliness — the length of time between the period to which the data pertain and when the data are released, and the frequency of data collection
- accuracy — the extent to which the data correctly describe what they are designed to measure
- coherence — the internal consistency of the data, as well as its comparability with other sources of information. Coherence is promoted by the use of standard concepts, classifications, populations and methods of collection
- interpretability — the availability of information ('metadata') to aid insight and understanding of the data, such as explanation of concepts and classifications used in the data
- accessibility — the ease with which users can obtain the data. This includes whether the data are publicly available, or have access restrictions, the range of products and formats in which the data are made available and the associated costs.

Source: ABS (2009).

## Evidence quality

The quality of education evidence crucially depends on the methods used to generate such evidence. In some Australian jurisdictions, as well as internationally, there have been efforts to classify the quality or 'strength' of education evidence according to particular characteristics, such as research design and methodologies (box 2.4).

These classification frameworks vary, but have as a common aim that decisions about programs, practices and investment of resources are informed by rigorous, methodologically sound evidence on the effectiveness of particular interventions (CESE 2016c; QldDET 2016). For example, in developing the *Teaching and Learning Toolkit*, the UK-based Education Endowment Foundation reports the quality of evidence on a five-point scale that takes into account:

- the quantity of evidence (the number of systematic reviews or meta-analyses and the number of primary studies that they synthesise)
- the methodological quality of the primary studies
- the consistency of the results across the studies reviewed (EEF 2016b).

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## Box 2.4      **Quality of education evidence — examples**

### **Centre for Education Statistics and Evaluation**

The NSW Centre for Education Statistics and Evaluation has developed an ‘evidence hierarchy’ that classifies education evidence according to three standards, in terms of the strength of the evidence for detecting effectiveness in education treatments, interventions or programs.

- Gold standard evidence: evidence from individual randomised controlled trials or from meta-analyses (summaries or syntheses) of such trials. (Randomised controlled trials are studies in which subjects are randomly assigned to a treatment or control group.)
- Silver standard evidence: evidence from individual quasi-experiments or from meta-analyses of quasi-experiments. (Quasi-experiments are studies that lack randomness in the assignment of subjects to treatment or control groups.)
- Other evidence: evidence that is not considered to provide a clear indication of effectiveness but may help provide some indication where no other evidence is available. It may include evidence derived from pre–post comparisons (studies that observe subjects before and after a treatment, rather than using control groups) or from expert opinion.

### ***Teaching and Learning Toolkit***

The *Teaching and Learning Toolkit*, developed by the UK-based Education Endowment Foundation, defines five levels of evidence quality.

- Very extensive: consistent high-quality evidence from at least five robust and recent meta-analyses, where the majority of the included studies have good ecological validity and where outcome measures include curriculum measures or standardised tests in school subject areas.
- Extensive: three or more meta-analyses from well-controlled experiments mainly undertaken in schools using student achievement data with some exploration of causes of any identified heterogeneity.
- Moderate: two or more rigorous meta-analyses of experimental studies of school age students with cognitive or curriculum outcome measures.
- Limited: at least one meta-analysis or systematic review with quantitative evidence of impact on achievement or cognitive or curriculum outcome measures.
- Very limited: quantitative evidence of impact from single studies, with effect size data reported or calculable. No systematic reviews with quantitative data or meta-analyses located.

Sources: CESE (2016c, 2016d); EEF (2016b).

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## 2.6 Cost-effectiveness of the evidence base

Data and evidence can generate value insofar as they contribute to informed decision making and improved outcomes, as well as promoting transparency and accountability. At the same time, developing the education evidence base imposes a range of costs.

These include costs associated with monitoring and benchmarking, including collecting and processing existing and additional data collections, as well as standardising data definitions. They also include the costs associated with evaluation, dissemination and application of evidence.

The distribution of these costs is relevant in considering the design and arrangements of a national education evidence base. Additional data collections, requirements or processes may be more burdensome for those schools, ECEC services, and state and territory governments with more limited resources. Schools and ECEC providers may also face higher costs in relation to creating and using evidence, reflecting their diversity in size, remoteness and affiliation. For example, schools and ECEC providers in remote areas may be subject to higher costs of network connection and use in relation to collecting, accessing and sharing data and evidence (chapter 4).

Under the framework set out in this chapter, the education evidence base should add value, meaning that data and evidence generate additional benefits in excess of additional costs, and these net benefits should also be greater than those of alternative options for achieving a similar objective. It bears emphasising that the primary aim of the education evidence base is to generate value in terms of improved education outcomes, rather than offering benefits for non-education sectors. Although other sectors (such as health) could potentially gain from drawing on information in the education evidence base, those gains would be considered of secondary importance, given that the cost burden of the education evidence base is likely to fall squarely on those in the education sector.

In assessing the costs and benefits of an education evidence base, it is also important to consider the costs and benefits of undertaking education reforms, initiatives and programs that are not sufficiently supported by evidence. The overall net benefits that would flow from an effective evidence base may substantially outweigh the net benefits associated with implementing programs unsupported by robust evidence — where such programs are costly yet offer limited or no improvement in education outcomes.



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## 3 Gaps in education data and evidence

### Key points

- All Australian governments and a number of organisations invest considerable effort in collecting data on early childhood education and care (ECEC) and schools. For example:
  - there are national ECEC collections that cover information about children, staff and service providers, including service quality and child development
  - in the school sector, there are national data collections that include data on all Australian students, staff and schools; student outcomes; and teachers.
- Most data reporting pertains to monitoring and benchmarking.
- There are quality issues in ECEC and school education data but quality is improving. Decisions to change data collection or dissemination practices to address a data quality issue should be guided by the following considerations:
  - is there a need to improve the quality of data so it is fit for purpose?
  - if there is a case to improve data quality, is improvement feasible?
  - are alternative ways of obtaining the required data available?
  - would there be a net benefit to improving data quality?
- Despite the large amount of data collected, there are gaps in national education data collections. Work in train will contribute to filling these gaps, which include information on:
  - learning outcomes of school students before Year 3 and of students with disability
  - broader student outcomes, particularly non-cognitive capabilities and 21<sup>st</sup> century skills (such as critical and creative thinking), and wellbeing
  - the education workforce and some external influences on learning outcomes.
- New cohorts of children should be established for longitudinal studies.
- A national education evidence base does not mean that data always need to be collected on all individuals; sample data can significantly increase the breadth of information collected, provide for the quality of analysis and evidence required and at lower cost than censuses.
- There is a paucity of evidence about some aspects of education in Australia. Three broad areas that could be strengthened include:
  - evidence on how ECEC quality and attendance are associated with education outcomes
  - the use of value-added approaches to measure growth in achievement over and above that expected, given the external influences relating to the school and the student
  - the creation and application of evidence on what works best in education settings.
- Improving data quality and collecting new data are only two of the ways in which gaps in Australia's education evidence base could be filled. Other approaches include improving data access and linkage, and supporting the creation and use of high quality education evidence.

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An evidence-based approach to improving education outcomes requires two complementary activities — monitoring progress against stated objectives and evaluating what works best to improve student outcomes (chapter 2). Monitoring requires accurate measures of education outcomes for students, and data about contextual factors influencing individual student and school-level outcomes. Evaluation requires data that can help identify causes of variation in performance of students and schools and that can support the evaluation of policies, programs and practices targeted at improving outcomes.

This chapter examines existing education data and evidence in Australia (section 3.1) and ways in which these data and evidence could be improved to support better monitoring and evaluation, with the ultimate goal of improving education outcomes. Issues relating to the quality of data collections are raised and a framework for considering them is outlined (section 3.2). Gaps in national education data collections (section 3.3) and education evidence (section 3.4) are discussed, and ways in which these gaps might be addressed are outlined (section 3.5).

In deciding which data quality issues and gaps to focus on, the Commission has taken account of submissions by inquiry participants and those suggestions that have the largest potential to improve national monitoring and evaluation in the short to medium term. A summary of all data quality issues, data gaps and evidence gaps raised by inquiry participants is presented in appendix B.

### **3.1 The Australian education data and evidence base**

All Australian governments and a large number of organisations invest considerable effort in collecting data and disseminating evidence on ECEC, school education and the external influences that affect education outcomes.

A selected list gives a sense of the volume of data collected (table 3.1). Most of these data are collected for monitoring purposes; relatively few are collected for the purpose of evaluation. A detailed description of existing education data collections is presented in appendix C.

Data are reported in a range of ways, including annual reports and regular statistical publications and through avenues like reports to parents and online portals (for example My School). Most data reporting pertains to monitoring and benchmarking, and contributes to accountability and transparency in the education sector. Evidence is disseminated through regular reporting and evidence repositories which include clearinghouses (for example the Australian Teaching and Learning Toolkit Initiative), peer-reviewed journals and other resources. Key avenues through which evidence is disseminated are described in appendix C.

**Table 3.1 Selection of Australian data — education and external influences<sup>a</sup>**

<i>Type of data</i>	<i>Collection</i>
<b>Early childhood education and care</b>	
Children, staff and providers	<ul style="list-style-type: none"> <li>• Preschool Census</li> <li>• National Early Childhood Education and Care Collection (preschool)</li> <li>• Child Care Management System (childcare)</li> </ul>
Child development	<ul style="list-style-type: none"> <li>• Kindergarten Development Check (preschool Tasmania)</li> <li>• School Entry Health Assessment (preschool Western Australia)</li> <li>• Australian Early Development Census (AEDC)</li> </ul>
Staff	<ul style="list-style-type: none"> <li>• National Early Childhood Education and Care Workforce Census</li> </ul>
Service providers	<ul style="list-style-type: none"> <li>• National Quality Agenda IT System</li> </ul>
<b>School education</b>	
Students, staff and schools	<ul style="list-style-type: none"> <li>• School Census</li> <li>• National Schools Statistics Collection</li> </ul>
Student outcomes	<ul style="list-style-type: none"> <li>• On-entry assessment<sup>b</sup></li> <li>• National Assessment Program — Literacy and Numeracy (NAPLAN)</li> <li>• National Assessment Program sample assessments</li> <li>• Programme for International Student Assessment<sup>c</sup> (PISA)</li> <li>• Trends in International Mathematics and Science Study<sup>c</sup> (TIMSS)</li> <li>• Progress in International Reading Literacy Study<sup>c</sup> (PIRLS)</li> <li>• International Computer and Information Literacy Study<sup>c</sup> (ICILS)</li> </ul>
Student wellbeing	<ul style="list-style-type: none"> <li>• Australian Wellbeing Project</li> <li>• Tell Them From Me (New South Wales)</li> <li>• Student Health and Wellbeing Survey (Victoria)</li> <li>• Middle Years Development Instrument (South Australia)</li> </ul>
Other student characteristics	<ul style="list-style-type: none"> <li>• National Data Collection</li> <li>• Nationally Consistent Collection of Data on School Students with Disability</li> </ul>
Teachers	<ul style="list-style-type: none"> <li>• Higher Education Statistics Collection</li> <li>• Staff in Australia's Schools Survey</li> <li>• Teaching and Learning International Survey<sup>c</sup></li> </ul>
<b>Longitudinal data</b>	
Children and students	<ul style="list-style-type: none"> <li>• Longitudinal Study of Australian Children (LSAC)</li> <li>• Longitudinal Study of Indigenous Children (LSIC)</li> <li>• Longitudinal Survey of Australian Youth (LSAY)</li> </ul>
<b>External influences</b>	
Health	<ul style="list-style-type: none"> <li>• National Perinatal Data Collection</li> <li>• Medicare data</li> </ul>
Social services	<ul style="list-style-type: none"> <li>• Centrelink data — including receipt of family tax benefits</li> <li>• Child protection data</li> </ul>
Demographics	<ul style="list-style-type: none"> <li>• Census of Population and Housing</li> <li>• Household, Income and Labour Dynamics in Australia Survey (HILDA)</li> </ul>
Labour force	<ul style="list-style-type: none"> <li>• Labour Force Survey</li> <li>• Survey of Education and Training</li> </ul>

<sup>a</sup> National data unless otherwise stated. <sup>b</sup> Collection name and content vary across jurisdictions. <sup>c</sup> International initiative.

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## 3.2 Data quality issues

### Quality issues exist but quality is improving

Inquiry participants identified a number of data quality issues — a selection is outlined in box 3.1.

#### Box 3.1 An overview of data quality issues

Timeliness issues relating to some ECEC data were raised, for example, by the Telethon Kids Institute (sub. 15) and Family Day Care Australia (sub. 63). The Australian Government Department of Education and Training (sub. 68, p. 5) noted that '[t]here are opportunities to examine the timing and regularity of data collections within the early childhood education sector ...'.

Accuracy issues were raised, for example, by the Independent Schools Council of Australia (sub. 39) in relation to data collected by schools on student and parent background. Likewise, Catholic Education Melbourne (sub. 72) raised issues in relation to incentives for schools to misreport data in the Nationally Consistent Collection of Data on School Students with Disability in order to secure more resources.

A number of coherence (consistency and comparability) issues were raised. For example, inconsistencies in attendance data between jurisdictions and sectors were nominated by Early Childhood Australia (sub. 71) (for preschools) and the Australian Institute of Health and Welfare (sub. 55) (for preschools and schools). Inconsistencies in data collected on teacher education and the teaching workforce were raised as areas of concern by the National Catholic Education Commission (sub. 49). And issues relating to variation between teachers in the collection of data on student disability were identified by Children and Young People with Disability Australia (sub. 66).

Interpretability issues due to a lack of metadata (information about the content and characteristics of a dataset) were raised, for example, by the Fraser Mustard Centre (sub. 52) and the Telethon Kids Institute (sub. 15).

Although issues exist, data quality has been improving (and there are commitments to further improvements). For example, the Australian Curriculum, Assessment and Reporting Authority (ACARA) and the Australian Government Department of Education and Training have (and are) addressing quality issues in school education data. A *Data Standards Manual: Student Background Characteristics* has been created, and work to improve the collection of attendance data is underway (ACARA 2015f, 2016b). In 2012, education authorities in all jurisdictions agreed to the *National Standards for Student Attendance Data Reporting* for students in Years 1 to 10. The standards were implemented in non-government schools across Australia in 2013; government schools in all states and territories except for New South Wales in 2014; and will be implemented in government schools in New South Wales from 2016. In addition, support is being provided to educators to improve their collection of data for the *Nationally Consistent Data on School Students with Disability* (DET, sub. 68).



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The Australian Institute of Health and Welfare has also put work into a national education data standards strategy (box 3.2).

**Box 3.2      Development of a national education and training data standards strategy**

From 2013 to 2014, the Australian Institute of Health and Welfare developed a national data strategy and implementation plan to improve the coherence of information across the education and training sector. The work was endorsed by the Education Council and overseen by the Council's Data Strategy Group and the Strategic Cross-sectoral Data Committee, as part of the Transforming Education and Training Information in Australia 2013–2014 Forward Work Program.

The project had three phases: establishing the scope of the project, reviewing data collections and developing the national data standards strategy. In the second phase, a number of priority data items were proposed for further development including: Indigenous status; remoteness; socioeconomic status; disability; proficiency in English; parental education and occupation; geography; and a range of education items including current and previous institution, type of institution, attendance and enrolment status.

An implementation plan that would help achieve the priorities was outlined during the third phase. The plan considered a number of issues including benefits, relevance to policy priorities, effort required, and existing and planned projects that aimed to improve collections and standards.

*Source:* AIHW (2015a).

## **A framework for evaluating potential responses to data quality issues**

Any decision to change data collection or dissemination practices to address a data quality issue should be guided by the following considerations.

**Is there a need to improve the quality of data so it is fit for purpose?**

Are the data fit for the purpose for which they were originally collected? Administrative data, for example, are often collected to support the day-to-day operations of a service provider or system. Many inquiry participants, particularly researchers, argued that there is a need to address quality issues to facilitate inter-jurisdictional comparisons and support more in-depth analysis. Although quality issues are a feature of some education data, the data may be of sufficient quality for their original purpose. The case for addressing data quality issues is stronger when data are less fit for purpose.

**If there is a case to improve data quality, is improvement feasible?**

Can the quality of the data readily be improved, given the manner or context in which the data are collected? Schools collect a range of data from parents through enrolment forms

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and thus have limited control over the accuracy and coherence of the data. While it might be feasible to improve the accuracy and coherence of some parent-reported data by altering existing data fields, in other cases it is harder due to the incentives to misreport. Parent-reported data on occupation and education, for example, are used to determine school funding at both state and national levels — potentially creating an incentive for parents to under-represent their education and occupation status. In the Independent school sector, parents might have an incentive to overstate their education or occupation to appear more reliable or suitable for the school community (ISCA, sub. 39). The case for addressing data quality issues is stronger when there is a higher likelihood that an initiative to improve data quality will be successful.

### Are alternative ways of obtaining required data available?

Are there approaches other than changing the quality of data items collected that could create the data necessary for a specific purpose? Data linkage, for example, or new fit-for-purpose collections (including sample data) may be more effective and efficient.

### Would there be a net benefit in improving data quality?

Would it be costly to improve data quality? Forcing alternative data standards or definitions onto a data collection could reduce its value for its original purpose and, in some cases, the costs of enforcing consistency could be high, if not prohibitive. Some issues of jurisdictional data comparability identified in the ECEC sector, for example, are due to differences in service models and are difficult to resolve. The Tasmanian Government (sub. 75, p. 6) noted that:

... comparability issues are often not due to a difference in data standards but are due to the differences in education delivery as well as differences in the structure of populations being compared.

Likewise, it would be unreasonable from a cost perspective to impose national standards on all administrative data collected within ECEC providers and schools simply because of the possibility that those data could be used for research. There must be a clear benefit from improving the quality of data collected, and this benefit — for example, opportunities for valuable research that would not otherwise be possible — must outweigh the costs. These costs can include the administrative costs borne by data custodians and compliance costs borne by those responsible for collecting and submitting the data (chapter 4). As the Australian Institute of Health and Welfare (2015a, p. 19) noted:

The addition or modification of data items in education and training collections to improve consistency requires considerable investment of resources to review, standardise and endorse changes, and subsequently implement changes across multiple systems. Aligning the [national data standards] strategy with policy priorities, and particularly where there are critical gaps in reference to policy, provides a sound basis and demonstrated value for the implementation of changes ...

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As costs increase relative to potential benefits, the case for addressing data quality issues is weaker.

**DRAFT RECOMMENDATION 3.1**

In assessing whether to improve the quality of existing education data, governments should examine whether:

- there is a need to improve the quality of the data so it is fit for purpose
- data quality improvements are feasible given the context of data collection
- other options are available
- the benefits of improving data quality exceed the costs.

### **3.3 Gaps in data collections**

An assessment of gaps could focus on classroom, state and/or national level data. Although collections at each level play an important role in supporting decision makers in the education system, the Commission has been asked to provide advice on the national approach to collecting and using data. Therefore, the focus in this section is on gaps in national assessments of education outcomes. Not considered in this section are data access or linkage issues. In many cases, data are collected but are not reported on or made available outside of their original purpose. These do not constitute data gaps per se. Data access and linkage issues are discussed in chapters 5 and 6.

A solution to a gap in national-level data does not necessarily require data collection for all individuals; sample data collections can hold useful information. The use of oversampling (incorporating a greater proportion of students from a particular subgroup within the sample than they represent in the population) can facilitate robust analysis of disadvantaged groups, such as Indigenous students. As The University of Western Australia Faculty of Education (sub. 10, p. 2) observed:

Whole population data collections, such as the NAPLAN [National Assessment Program — Literacy and Numeracy] and AEDC [Australian Early Development Census], are expensive to conduct and of necessity are limited in the breadth of information that they can collect. It is not always necessary to have data on the full population to undertake valuable research. Surveys and testing programs administered to samples, some of which may be specifically directed to high risk or disadvantaged groups, can significantly increase the breadth of information collected.

The Association of Heads of Independent Schools of Australia (sub. 50, p. 2) advocated that samples be collected to lower the compliance costs on schools and families providing the data:

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Sample testing and surveying provide rich information for policy development and minimise administrative burdens for schools and intrusion on the privacy of families and students. Sample testing and surveying should be the preferred data collection methods in the school education sector for policy development purposes.

## Gaps in data on early learning outcomes

### Nationally consistent data on outcomes

National learning frameworks for ECEC describe the importance of assessing children's learning and development against early learning objectives (ACECQA 2013a). Educators are required to collect assessment data and to use it to inform their programs and practices. In other words, the purpose of these data is to inform educators. Consistent with this purpose, the *Early Years Learning Framework* (chapter 1) notes that there are many ways in which children demonstrate learning across the outcomes, and provides examples (DEEWR 2009b). Specific measures for the outcomes are not stipulated. Similar approaches to monitoring children's early learning outcomes are used internationally (OECD 2015c).

A number of inquiry participants submitted that early learning outcomes should be measured on a nationally consistent basis before the start of formal schooling. One argument in support of this is to monitor Australia's progress in meeting its early learning objectives. Speech Pathology Australia (sub. 35, p. 17) commented that:

Despite the Early Years [Learning] Framework being a national educational policy, there does not exist any systematic, consistent collection of data at a national level to determine if these outcomes are being achieved by Australian children in the year prior to starting formal schooling.

Other participants argued that nationally consistent assessments could help identify vulnerable children and direct early intervention strategies to improve later life outcomes. For example, the Melbourne Graduate School of Education (sub. 54, p. 3) stated that:

The lack of nationally consistent data on young children's competencies results in no consistent way to know how children are faring in the years *before* school, and the relation of this to their later school achievement ... While [data available at the first year of school are] valuable, this collection cannot effectively direct early childhood interventions. It is well established that gaps in cognitive outcomes emerge very early, and are predictive of later outcomes.

Inquiry participants proposed a range of development outcomes that could be measured, including cognitive and non-cognitive abilities and physical development. Indicators of cognitive abilities could include measures of vocabulary, language and verbal ability (Early Start, University of Wollongong, sub. 26; MGSE, sub. 54). Indicators of non-cognitive abilities might include measures of self-regulation, persistence and resilience (Northside Community Service, sub. 16).

Although a nationally consistent collection would have benefits, there are challenges associated with assessing development outcomes. A recent report on the costs and benefits

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of instruments used to measure children's early learning outcomes cautioned that the data collected tend to lack reliability because children develop at very different rates in their early years (Barnett, Riley-Ayers and Francis 2015). Early Childhood Australia (sub. 71, p. 8) expressed similar views and suggested that existing data on early childhood outcomes might be sufficient:

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.

An issue also arises with the collection of data on children who do not attend ECEC. Many inquiry participants supported the inclusion of these children within the scope of the national education evidence base. It is unclear, however, who would be best placed to collect data on their outcomes. The Melbourne Graduate School of Education (sub. 54, p. 3) suggested that data could be collected through child health checks or from parents.

Overall, the ability to take a national view of children's outcomes in a systematic and consistent way would be useful for monitoring how Australia is progressing in achieving the learning outcomes in the *Early Years Learning Framework*. The data might identify areas of development needing extra policy attention, and could be useful for examining how changes in government policy affect children's outcomes. Triennial data on early learning outcomes are currently collected through the AEDC during a child's first year of full-time school (appendix C). Could these data be used to monitor progress against Australia's early learning objectives?

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#### *INFORMATION REQUEST 3.1*

*The Commission seeks comment on whether the Australian Early Development Census could be used to monitor progress against Australia's early learning objectives.*

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While there would be benefit in early identification of children who might be vulnerable to poorer education outcomes, the evidence suggests that assessment of all children would be difficult and would not yield reliable information. An alternative approach might be to look at the characteristics of parents. This is discussed further in the section on external influences on education.

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## Longitudinal studies of Australian children

The *Longitudinal Study of Australian Children* (LSAC) and *Longitudinal Study of Indigenous Children* (LSIC) collect data that support analysis of the effects of children's economic, social and policy environments on their development and wellbeing over time (appendix C).

Given changes in economic and social conditions, and recent changes in ECEC settings — for example, the creation of the *National Quality Framework* (NQF) in 2012 — several inquiry participants noted the potential benefits of new cohorts of LSAC and LSIC. For example, the Australian Children's Education and Care Quality Authority (ACECQA, sub. 11, p. 8) stated:

Australia's major national birth cohort studies, [LSAC and LSIC,] commenced in 2004 and 2008 respectively. Although both studies have relatively large (and, in the case of LSAC, nationally representative) samples, they were established before the creation of the NQF.

These surveys are consequently limited in the insights they can provide into the current early childhood education policy context and the NQF's contribution to positive outcomes for children and communities.

New longitudinal cohorts could provide significant benefits to researchers and policy makers, particularly if there are investments in data linkage at the outset of the survey (Edward and Siphthorp, sub. 73, pp. 4–5). For example, while it is well established that the quality of ECEC services plays an important role in child development, there is a lack of evidence on the contribution of different aspects of quality to child development (AIHW 2015b; PC 2014). Longitudinal data on children who were exposed to ECEC services after the NQF was implemented, together with the ECEC quality data (captured by the National Quality Agenda IT System), would allow researchers to address some of the questions on how ECEC affects children's outcomes.

Furthermore, much has been learned about the collection of longitudinal survey data since LSAC and LSIC commenced. For example, the approach to data cleaning in LSAC has improved as the study has developed (AIFS 2015b). Current weaknesses of LSIC include its lack of representativeness of all Indigenous children, relatively small sample size and lack of comparability with questions asked in LSAC and other surveys. That said, some of these issues have arisen through the intentional design of the survey, in order to be sensitive to cultural issues (Dodson, Hunter and McKay 2012, p. 78). Application of these learnings would strengthen the value of any new collection.

The costs of LSAC and LSIC include both the financial costs of those administering the surveys and the compliance costs on those surveyed. In 2000, the Australian Government, through the then Department of Family and Community Services, allocated \$20.2 million over nine years to support the design, development, implementation and management of LSAC (AIFS 2002). The Australian Government also provided \$17.4 million in funding over eight years from 2003-04 for LSIC (DSS 2015a; Treasury 2003, 2007). Despite

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having a smaller sample size, LSIC has additional costs associated with liaising with communities and building research capabilities of Indigenous interviewers (Dodson, Hunter and McKay 2012). The Australian Government has since provided ongoing funding to maintain both studies. The financial cost of new cohorts of LSAC and LSIC would depend on study details including the sample size and the degree to which data linkage could be used to reduce the number of survey questions. As LSAC and LSIC are sample studies, the compliance costs of participating falls on a relatively small number of families — the original two cohorts of LSAC had about 5000 children each (DSS 2011, 2015c) — and participation is voluntary.

Overall, subject to evaluation of the design, development, implementation and management of the current studies, and any necessary responses to known concerns, the potential benefits to decision makers in the education system of new LSAC and LSIC cohorts are likely to outweigh the costs. Introducing mechanisms to establish new cohorts regularly after a set number of years would facilitate research in a changing policy landscape.

**DRAFT RECOMMENDATION 3.2**

The Australian Government should request and sufficiently fund the agencies that conduct the *Longitudinal Study of Australian Children* and the *Longitudinal Study of Indigenous Children* to establish new cohorts of children at regular intervals.

## **Gaps in data on school education outcomes**

A range of school education outcomes are assessed through the National Assessment Program (NAP) (which includes NAPLAN, the NAP sample assessments and four international sample assessments of students (appendix C)). However, limitations with the NAP and its capacity to inform decision making have been raised. First, assessments are only administered to students from Year 3. Outcomes of students in earlier years are not assessed on a nationally consistent basis. Second, the NAP does not cover a number of areas that are considered important to student development, such as non-cognitive outcomes. Third, the assessments used in the NAP might not accurately measure outcomes for some groups of students, such as those with disabilities.

### **Steps are in train to conduct an early assessment of student outcomes**

Some inquiry participants have argued that students' cognitive outcomes should be assessed and monitored on a nationally consistent basis earlier than NAPLAN in Year 3 (for example, AASE, sub. 30; ACARA, sub. 62; ACER, sub. 32; de Lemos et al., sub. 6; Meyer, sub. 34). An area of assessment that received particular attention from participants is phonics, which research suggests is an important factor in reading outcomes (box 3.3).

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### Box 3.3      **Phonics assessment**

Phonics received attention from a number of participants (for example, AASE, sub. 30; de Lemos et al., sub. 6; Hempenstall, sub. 1; Meyer, sub. 34). Phonics is a method of learning to read that involves understanding the sounds that individual letters and combinations of letters make (Walker et al. 2015). The importance of phonics to the teaching of reading was acknowledged in the National Inquiry into the Teaching of Literacy (DEST 2005). Although the inquiry found that teachers should be able to draw on multiple techniques suited to the needs of individual children, systematic phonics instruction was deemed to be critical to children learning to read (DEST 2005, p. 11).

Some evidence of the benefits of a national phonics assessment is available from the United Kingdom. A Year 1 phonics screening check was introduced in 2012 to help identify children who may need extra support to improve their decoding skills (their ability to recognise sounds that letters and combinations of letters make, and blend the sounds to form words). An evaluation of the check suggested that it has led to improvements in the teaching of phonics and in student performance in phonics. However, there was no conclusive evidence of an improvement in reading and writing achievement within the evaluation time frame (Walker et al. 2015). Some teachers also indicated that the phonics screening check did not reveal anything of which teachers were unaware and that an overemphasis on the teaching of 'nonsense words' in response to the check was problematic (Walker et al. 2014, 2015).

Monitoring education outcomes at an early age would help to identify students who have not developed the early skills necessary for further progress, so that interventions can be targeted towards them. For example, de Lemos et al. (sub. 6, p. 1) submitted that:

... a weakness of the NAPLAN testing is that Year 3 is too late to identify students who have failed to develop the essential early reading skills that provide the basis for subsequent literacy development.

Evidence suggests that addressing reading problems early is less costly than later interventions and increases the chances that the student will catch up (Pfeiffer et al. 2001). According to the US National Institute of Child Health and Human Development, it takes four times as much assistance to improve a student's reading skills if help is delayed until Year 4 than if it is provided in their Foundation Year (Pfeiffer et al. 2001).

Nationally consistent assessments of school outcomes in early year levels would also provide an earlier starting point for tracking student progress over time. These data could then be used for value-added analysis (section 3.4) and shed light on the impact of early achievement on later outcomes.

Internationally, like Australia, national assessments tend to begin in later years of schooling. However, some countries in addition to the United Kingdom have introduced student assessments in the earlier years of schooling. For example, in the Netherlands, national assessments begin from Year 1 and support longitudinal student monitoring (box 3.4). In Norway, the results of compulsory national 'mapping tests' in Years 1 to 3 are used by schools, students and parents to identify students who may need extra support (Nusche et al. 2011). These tests are low-stakes for schools. The results are not used for



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school accountability purposes or registered nationally. A 20 per cent sample is collected for national analyses and to establish a benchmark for the lowest 20 per cent of achievers who might need extra support.

**Box 3.4      The Netherlands' *Leerling Volg Systeem* — a longitudinal student monitoring system**

In the Netherlands, since the 2014-15 school year, primary schools have been required to implement a student monitoring system to regularly assess their students' progress. Schools retain the freedom to choose the provider and frequency of test administration. The *Leerling Volg Systeem*, developed by the Central Institute for Test Development (*Centraal Instituut voor Toetsontwikkeling*, CITO), is the system most commonly used by primary schools.

CITO offers tests, to be taken once or twice a year, in the following subjects for students in Years 1 to 8 (primary school in the Netherlands):

- Years 1 and 2: ordering, language and orientation in space and time
- Years 3 to 8: Dutch language, mathematics, social and emotional development
- Years 6 to 8: world orientation (geography, history, biology), science and technology
- Years 7 and 8: English.

Tests within a subject area are linked so that student progress can be tracked.

CITO also offers tests for the first two years of secondary school — at the beginning of secondary school and at the end of the first and second years. Four subject areas are tested: Dutch reading comprehension, English reading comprehension, mathematics and study skills. These are offered at three different levels of difficulty, corresponding to the three tracks in the Dutch education system (pre-vocational, general and pre-university).

Source: Nusche et al. (2014).

Some jurisdictions have standardised assessments at school entry (such as the *Performance Indicators in Primary Schools* assessment in Tasmania and the ACT, appendix C). Recent announcements also indicate that Australia is moving towards national assessment starting from Year 1 through the student achievement plan (Birmingham 2016). In particular, one element of the plan is to:

Undertake a standardised Year 1 school assessment of students' reading, phonics and numeracy skills to ensure the earliest possible interventions occur for students who need additional help. (Birmingham 2016, p. 1)

The student achievement plan includes an additional \$1.2 billion funding over three years from 2018. The results of the Year 1 assessment need to be timely enough to inform teaching practices and target interventions. The ability to link these assessment data to later school outcomes, such as NAPLAN results from Year 3 and onwards, would also be useful for tracking student progress over time.

That said, the OECD found that teachers have difficulties interpreting and effectively using information generated by national assessments, including early school assessments, to

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improve teaching and learning (for example, Nusche et al. 2011, 2014; Santiago et al. 2011; Shewbridge et al. 2011). In order for any further national assessments to be used to their full potential in Australia, teachers need to have the capacity and capability to effectively use the results to inform their teaching. This issue is discussed further in chapter 7.

## Steps are in train to broaden the types of outcomes that are assessed

The literacy and numeracy outcomes of students are routinely assessed on a nationally consistent basis through NAPLAN, and assessments of some additional outcomes exist through the NAP sample assessments. However, there are few national assessments of other education outcomes that are important to Australia's education objectives. For example, the Australian Curriculum includes outcomes such as critical and creative thinking, personal and social capability, ethical understanding and intercultural understanding (ACARA 2015a), but there are no national assessments of these capabilities.

Many inquiry participants expressed a view that a broader range of outcomes should be assessed in order to monitor how children are developing. For example, the Australian Government Department of Education and Training (sub. 68, p. 3) stated that:

Ministers have agreed that education goes beyond literacy and numeracy skills, and that education plays a vital role in promoting the intellectual, physical, social, emotional, and other elements of well-being of young Australians. As part of a high quality education evidence base, issues such as measuring non-cognitive development are challenging. However, they are important to understanding the wider influences on learning and making young people active and engaged citizens.

The fact that the outcomes tested within NAPLAN are limited has also been noted in external reviews (for example, Gonski et al. 2011; Santiago et al. 2011). This is a potential concern if NAPLAN results are overemphasised in decisions about Australia's educational system (Santiago et al. 2011).

Non-cognitive capabilities, '21<sup>st</sup> century skills' and wellbeing have received the most attention from participants.

### *Non-cognitive capabilities and 21<sup>st</sup> century skills*

Non-cognitive capabilities and 21<sup>st</sup> century skills encompass a wide range of attributes, including perseverance, sociability, creativity, problem solving, communication and teamwork (McGaw 2013; OECD 2015b). The value of these skills is generally recognised. The OECD recently reported on the importance of developing these capabilities in order to adapt to economic, social and technological challenges (OECD 2015b). Research evidence also suggests that non-cognitive skills are associated with better academic, employment and life outcomes (Gabrieli, Ansel and Bartolino Krachman 2015). Teachers have a role to play in developing children's social and emotional skills (OECD 2015b).

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Although these skills tend to be seen as harder to measure than cognitive skills, some assessment methods exist. Measures have been developed using self-reports, teacher-reports, performance in specific tasks (including through experiments and psychometric observational studies) and administrative records of student behaviours (OECD 2015b, pp. 36–38). However, the subjective nature of some of these measures means they could be affected by bias. As a result, it has been suggested that they are ill-suited to use for school accountability, but that there is scope to develop them further for use in program evaluation and practice improvement (Duckworth and Yeager 2015).

In Australia, ACARA is working to expand the scope of the NAP sample assessments to include assessments of critical and creative thinking, ethical understanding, intercultural understanding and personal and social capability (ACARA, sub. 62). The Victorian Curriculum and Assessment Authority is also working in partnership with the Mitchell Institute on a project to develop teaching and assessment strategies in these same areas (Mitchell Institute, Victoria University, sub. 31). Furthermore, the 2015 Programme for International Student Assessment (PISA) survey includes a measure of collaborative problem solving (OECD 2013b).

### *Student wellbeing*

Student wellbeing is ‘a sustainable state of positive mood and attitude, resilience, and satisfaction with self, relationships and experiences at school’ (ACU and Erebus International 2008, p. 24). Student wellbeing can be seen as both an influence on education outcomes and as an outcome in its own right.

As an outcome, student wellbeing is an increasingly important objective for schools. ‘The Australian Government recognises that schools play a vital role in promoting the social and emotional development and wellbeing of young Australians’ (DET 2016e). The importance of wellbeing is also recognised in education policy documents such as the Melbourne Declaration (MCEETYA 2008). Some state government education departments have wellbeing frameworks that recognise the crucial part that schools play in developing student wellbeing, for instance, through learning experiences and fostering relationships (for example, NSW DEC 2015; QldDET 2015a).

As an influence, evidence suggests that student wellbeing is linked to education and other life outcomes. Promoting wellbeing can improve achievement by increasing student engagement, motivation and attendance, as well as decreasing problem behaviours that lead to suspension and exclusion (ACU and Erebus International 2008). Overall, students with high levels of wellbeing are more likely to have higher academic achievement and complete Year 12, as well as better mental health and a more pro-social lifestyle (one characterised, for example, by respect, care and concern for others) (ACU and Erebus International 2008).

In Australia, a few measures are already being used to assess wellbeing. As outlined in appendix C (table C.4), some states conduct surveys relating to social and emotional

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wellbeing. The Australian Council for Educational Research also offers a *Social–Emotional Wellbeing Survey* to schools (ACER 2016c). The *Strengths and Difficulties Questionnaire* is a short behavioural screening questionnaire for 3 to 16 year olds, originally developed by child psychiatrist Robert Goodman and available online (Youth In Mind 2012). This measure has been used widely — in the LSAC, jurisdictional health surveys and internationally (AIHW 2012). At a national level, the *Australian Child Wellbeing Project* includes a nationally representative survey of wellbeing among children aged 8 to 14 years (ACWP 2016).

In an analysis of potential indicators for social and emotional wellbeing, the Australian Institute of Health and Welfare (2012) recommended an indicator be based on the *Strengths and Difficulties Questionnaire*. Some of its main advantages were that it: is developmentally appropriate; has been extensively validated; measures both positive and negative attributes; is used worldwide; has been used in Australia as a population measure; and is short to administer and readily incorporated into broader surveys.

There are also initiatives in progress to measure student wellbeing in Australia. In particular:

... ACARA is working with states and territories and other stakeholders to better measure student wellbeing and engagement because of their dual role as both an enhancer of student learning and a key outcome of schooling. (ACARA, sub. 62, p. 3)

Overall, there is wide consensus and evidence in support of broadening the scope of national testing to include non-cognitive capabilities and 21<sup>st</sup> century skills, as well as student wellbeing. This would support monitoring of these outcomes and research into whether school programs and practices are effective in developing these skills.

### Steps are in train to improve information about students with disability

Evidence suggests that students with disability might be underrepresented in national assessments. It has been estimated that more than a third of children with special needs do not participate in NAPLAN (Dempsey and Davies 2013). Children and Young People with Disability Australia (sub. 66, p. 6) stated that it ‘frequently hears of students with disability being excluded from NAPLAN testing, often at the request of schools or because no additional support was provided to allow students to participate’.

There are some adjustments to NAPLAN available to students with special needs, such as extra time or the use of a scribe (NAP 2016a, 2016b), but the use of these approaches can be inconsistent across schools (Urbis 2015). In general, this approach of special arrangements and accommodations for students with disability is also taken by other countries in their national assessments (Pepper 2007). The move to NAPLAN online (chapter 4) might address some of the issues of assessment. For example, alternative test displays could be provided to students with vision impairments. However, because of the diversity of students with disability, NAPLAN online may not be able to accommodate the requirements of all students.

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Nevertheless, it is important that data collection ‘provide[s] accountability and transparency around educational outcomes for students with disability who do not participate in NAPLAN’ (AASE, sub. 30, p. 1). The Australian Government also recognises the need to ‘ensure that students with disability can access and participate in education on the same basis as other students’ (DET 2016a).

The general lack of consistency in assessment and reporting of outcomes for students with disability means that their outcomes ‘are not included in the decision making regarding national and state testing and subsequent planning that takes place around this testing’ (Forlin et al. 2013, p. 28). Further, the Australian Association of Special Education (sub. 30, pp. 2-3) noted that:

The lack of outcome data means that although schools are making adjustments, there is no way of judging the general effectiveness of these adjustments, or knowing whether additional targeted funding and supports for students with disability are effective.

A more consistent approach to assessing students with disability would facilitate monitoring of outcomes, and planning and accountability of governments and school systems. The approach must recognise the diverse needs of such students. The newly introduced initiative on the *Nationally Consistent Collection of Data on School Students with Disability* (DET 2016f, appendix C) might help to address the issue of assessing students with disabilities by assisting teachers with monitoring progress and responding to students’ needs (Audit Office of New South Wales 2016, p. 27). However, as noted above, there are issues with the current quality of these data that could affect its reliability. As this data collection improves, it could have a greater role in guiding improvements in the outcomes of students with disability.

## **Steps are in train to develop data on the education workforce**

A number of inquiry participants pointed to a need for better national data on the education workforce (for example, AITSL, sub. 5; ECA, sub. 71; Mitchell Institute, Victoria University, sub. 31). The need to improve workforce data has also been expressed in the Teacher Education Ministerial Advisory Group’s recent report on initial teacher education (TEMAG 2014).

One motivation for improving data on the education workforce is to support workforce planning. Existing data collections on the teacher workforce have been found to be inconsistent and lacking in detail on subject specialisations, which has resulted in difficulties for initial teacher education providers and employers to match supply and demand (DET 2016f, appendix C).

There is also a case for improving workforce data in order to assess better the impacts of initial teacher education on classroom readiness and student outcomes (TEMAG 2014). As the Mitchell Institute, Victoria University (sub. 31, p. 23) stated:

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Strengthening initial teacher education data would provide highly relevant and useful data for understanding the relative success of initial teacher education programs and early career mentoring strategies, as well as enabling assessment of initiatives intended to improve them.

The ability to link workforce data to other data, such as student and school outcomes, would facilitate analysis into these issues. Data linkage issues are discussed further in chapter 6.

Recent initiatives have aimed to improve education workforce data. The triennial *National ECEC Workforce Census* has collected data on ECEC staff and service providers since 2010 (DET 2016g, appendix C). In 2011, the Australian Government contracted Ernst & Young to develop a *National Teaching Workforce Dataset*, which included data on teachers' backgrounds, teacher registration and current employment (DET 2014b). Despite this work, an ongoing collection was not established. However, the Australian Institute of Teaching and School Leadership (AITSL) is currently working on a national minimum dataset that will provide more comprehensive and continuous data on teachers (box 3.5).

#### **Box 3.5      A national minimum dataset for the teacher workforce**

In 2014, the Australian Government asked AITSL (in collaboration with states and territories and their regulatory authorities) to coordinate an approach to workforce data collection (AITSL 2014b). Currently, workforce data collected includes census data on initial teacher education (*Higher Education Statistics Collection*) and survey data on teacher destination, course experience, career and retirement intentions, and current teacher shortages (*Australian Graduate Survey* and *Staff in Australia's Schools Survey*). The dataset proposed by AITSL aims to provide a more comprehensive approach. It will include a teacher identifier and contain information pertaining to:

- initial teacher education — teacher background, prior academic achievement and initial teacher education program details
- teachers — demographic information
- registration — year, status and restrictions
- employment — status, load, place of employment
- teaching — perceptions of initial teacher education program, employer perception of teacher classroom readiness, subject level taught, professional development and career intentions (AITSL, sub. 5).

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#### DRAFT FINDING 3.1

Ongoing initiatives should help to fill many of the identified data gaps.

- The Australian Government's proposal for a national Year 1 assessment should help to better assess performance of early school skills and to identify students who need early intervention.
- Work by the Australian Curriculum, Assessment and Reporting Authority, the Victorian Curriculum and Assessment Authority and relevant research institutes should help to improve methods and metrics for measuring non-cognitive outcomes.
- The *Nationally Consistent Collection of Data on School Students with Disability* should help to improve the monitoring of outcomes of students with disability.
- The development of a national minimum teacher dataset by the Australian Institute for Teaching and School Leadership should help to support workforce planning and assessment of initial teacher education.

### **Additional data on external influences should be collected where warranted**

As discussed in chapter 2, the education outcomes of children and young people are affected by influences that are external to the education system. Studies of student achievement suggest that these influences could make a larger contribution to students' outcomes than do school factors (Emerson et al. 2012). It is important to take them into account when evaluating the effects of education policies, programs and practices on education outcomes. If data on these influences are not available, valuable insights about how the effects of an initiative vary for different groups of children and young people (for example, between those from more and less advantaged backgrounds) could be missed. There is also the risk that estimates of the relationship between an initiative and an outcome could be biased.

From the perspective of an education provider, knowledge of a student's characteristics might be important to understanding and supporting them. For example, it might assist educators in tailoring their teaching to the individual needs of students or identifying students who might be vulnerable so that specific interventions can be targeted towards them.

Basic background information is collected within education datasets, and information on some other external influences is available within health and other datasets (appendix C). These data could be linked to support research, teaching practices and the targeting of interventions. For example, the families of children who are not attending ECEC are often experiencing socioeconomic disadvantage (United Voice, sub. 42, p. 4). Supporting them in accessing targeted ECEC programs could have substantial benefits, especially if the children are vulnerable to poorer education outcomes. The Mitchell Institute, Victoria University (sub. 31, p. 17) suggested that the detection of these families and children could

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be facilitated by linking ECEC enrolment data to data from the health sector or the Australian Government Department of Human Services. (Data linkage is discussed further in chapter 6.)

Participants have indicated that data on other external influences that could be important to education outcomes are not collected to a sufficient degree in any national datasets. For example, the Telethon Kids Institute (sub. 15, p. 3) noted that '[t]he quality of the home environment is the most important factor in a child's social and intellectual development ... Australia has no measure on the quality of parenting or family cohesion'. The Queensland University of Technology Faculty of Education (sub. 19, p. 11) indicated that further data are required on 'the degree of parental engagement with their child throughout their school years; parents' perceptions of the value of education and where they think academic excellence comes from ... '.

Research evidence shows that the engagement of a parent in their child's education, and the home environment the child is exposed to, have an effect on the education outcomes of the child. For example, studies using international data have found that parental engagement in the early years of children's development through parent-child reading activities had positive effects on children's cognitive skills such as reading, language and comprehension (Gest et al. 2004; Westerlund and Lagerberg 2008). Similarly, the home learning environment has been found to have a positive effect on children's cognitive development. For example, a study using linked LSAC and NAPLAN data found that children aged 2-3 who had more stimulating home learning environments (particularly the frequency of reading to children and the number of children's books) performed better in Year 3 reading and numeracy tests than those who had less stimulating home learning environments (Yu and Daraganova 2014).

There is merit in collecting data to produce research into the interactions between external influences and education outcomes, or to control for external influences in evaluative research. However, these data do not have to be collected on all Australian students in order to produce valid results. Instead, data on external influences that are considered to be most relevant could be collected on a case-by-case and fit-for-purpose basis. The information could be collected for a representative sample rather than for all students. For example, PISA survey data currently include a range of external influences, including parental education and occupation, family wealth, parental engagement and home educational resources (OECD 2016). These data have been valuable in examining the association between external influences and education outcomes for school students (for example, Lokan, Greenwood and Cresswell 2008).

On the other hand, collection of data on all Australian students could be useful if the intention is to detect individual students who may be adversely affected by particular external influences. Schools and teachers might want to identify these students to inform their planning and direct where education interventions should be targeted. However, research evidence generally suggests that the type of external influence included in research that makes the largest contribution to student outcomes is socioeconomic status



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(for example, Lamb et al. 2004; Lokan, Greenwood and Cresswell 2008; Nous Group 2011). Schools already collect socioeconomic information (notwithstanding quality issues). Although other external influences have also been associated with education outcomes, their contributions to variation in education outcomes tends to be smaller.

### **3.4 Gaps in education evidence and its application**

Three broad areas could be strengthened in Australia's education evidence base — evidence on how ECEC affects education outcomes; use of value-added approaches to measuring education outcomes; and the evaluation of what works best in education settings to improve outcomes. There are also gaps in the application of evidence on what works best.

#### **Evidence on early childhood education and care**

There is a large body of international evidence on the benefits of quality ECEC for children and the nation as a whole. As the OECD (2012, p. 9) noted:

A growing body of research recognises that [ECEC] brings a wide range of benefits, for example, better child well-being and learning outcomes as a foundation for lifelong learning; more equitable child outcomes and reduction of poverty; increased intergenerational social mobility; more female labour market participation; increased fertility rates; and better social and economic development for the society at large.

Notwithstanding the international research, there is limited evidence on how ECEC contributes to education outcomes in the Australian context (Harrison et al. 2011). Multiple inquiry participants (for example, ACECQA, sub. 11; Biddle and Breunig, sub. 25; CCCC NSW, sub. 51; Mitchell Institute, Victoria University, sub. 31; RIPPLE, sub. 45) and reports (for example, AIHW 2015b; PC 2014), have indicated that there is scope to enhance Australia's education evidence base in the area of ECEC, particularly with respect to:

- the contributions of ECEC quality components to development outcomes of children (such as the physical classroom environment, programs and practices, staff qualifications and staff to child ratios)
- how ECEC attendance affects the outcomes of students in their early years of schooling (such as the effects of the number of hours of ECEC that children receive and the age at which children begin attending ECEC, as well as the long-term effects of ECEC attendance on life outcomes)
- how ECEC programs benefit different groups of children and families, particularly for Indigenous children and disadvantaged children.

In part, gaps in evidence about these issues reflect a lack of rigorous trials and evaluation of ECEC programs and interventions — discussed below in the context of what works best and in chapter 7. But they also reflect a lack of exploratory research on the associations between characteristics of ECEC and children's outcomes. Improvements in data quality

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and content (discussed above) and access and linkage (discussed in chapter 6) would help researchers to address this gap.

Previous research by the Commission pointed to the potential benefits of linked data to the development of ECEC evidence (PC 2014). The Commission found that:

The Australian Government should establish a program to link information for each child from the National ECEC Collection to information from the Child Care Management System, the Australian Early Development Census, and NAPLAN testing results to establish a longitudinal database. Where possible, this should also be linked to other key administration data sets and Censuses. (PC 2014, p. 714)

There is a strong case for including ECEC data within a national education evidence base to both investigate the above issues to inform policy and practice and to include it as a contextual factor in research on education outcomes of school students.

The Australian Institute of Health and Welfare has a project underway to develop a *National Early Childhood Development Researchable Data Set* by linking health and education datasets together (appendix C). It aims to provide data on all children to enable robust analyses of outcomes for population subgroups and analysis of the impacts of policies and programs (AIHW 2014a). The project has experienced a number of challenges relating to data access (AIHW 2014a). It is currently on hold as the Australian Institute of Health and Welfare awaits ‘further resources from the Australian Government to gain approval to procure and link data’ (AIHW, sub. 55, p. 4).

## **Value-added measures of education outcomes**

There is also a case for a greater focus on value-added measures of education outcomes in the education evidence base. Absolute levels of achievement, as indicated by average NAPLAN scores for example, do not provide a full picture of the impact that schools have on student learning. Value-added measures take into account two additional aspects of student achievement: growth over time and external influences that schools have little control over. That is, value-added analysis focuses on the value that a school has added to the learning of a student, over and above that expected given the backgrounds and prior levels of achievement of students within the school (CESE 2014a; Doran 2003; Downes and Vindurampulle 2007). It is considered a more appropriate method for measuring educational efficiency, effectiveness and economy (E3 and SEMETRICA, sub. 17). This approach ‘creates a fairer system for comparing school performance that is not biased against schools serving more disadvantaged communities’ (Grattan Institute, sub. 61, p. 10).

Value-added measures have been examined to an extent (for example, CESE 2014a), but they are ‘still in infant stages of use in Australia’ (Grattan Institute, sub. 61, p. 12). Grattan Institute (sub. 61, p. 6) indicated that:

While larger state departments are well positioned to undertake this function for government schools, there could be gains from doing it at a national scale and across all three sectors.

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Although the use of value-added approaches cannot answer why some schools add more value than others, they are a useful starting point for further analysis of high-performing schools to shed light on school effectiveness and understand what works to improve education outcomes (CESE 2014a). In particular:

[The] results can inform how well school improvement strategies are working, and highlight possible areas for learning, future planning or further research. They can also provide low [value-adding] schools with learning opportunities by enabling investigation of the factors that contribute to higher [value-added] scores in schools with similar student and school characteristics. (CESE 2014a, p. 5)

Fundamental to performing value-added analysis is the availability of longitudinal data on student education outcomes and external influences. Some of these data could be made available by linking datasets, including those outside the education sector. A unique student identifier may not be necessary for data linkage (chapter 6). However, it could support the tracking of students across the education system, enabling their education outcomes and external influences (for which data are collected by the education system) to follow them over time (chapter 4). However, care is necessary to ensure that the personal information of students is protected. Privacy and data linkage issues are discussed further in chapters 5 and 6.

**DRAFT RECOMMENDATION 3.3**

Australian, state and territory governments should support greater use of value-added measures of education outcomes.

## **Evaluation and application of evidence on what works best**

There is a growing realisation that a different approach to improving education outcomes is required. Reform effort has not led to improvement in education outcomes (chapter 1), and a top-down approach based on monitoring and benchmarking performance has proven insufficient to drive improvements in education outcomes (chapter 2).

Evidence suggests that looking within the classroom, particularly at teaching practice, can be more effective at providing insights into what works best to improve education outcomes. Research has generally found that only a small share (typically about 20 per cent) of variation in education outcomes is explained by differences between schools. The majority (about 80 per cent) is explained by differences within schools (for example, Gemici, Lim and Karmel 2013; Lokan, Greenwood and Cresswell 2008; Nous Group 2011; PC 2016).

Differences within schools include differences in student characteristics as well as differences in teachers and teaching practices. Research has shown that there are large differences in teacher effectiveness within schools (Hanushek 2016). Hattie (2003) has

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suggested that teachers have the greatest impact on student performance outside of students' own characteristics, and that directing attention to higher quality teaching can have large positive effects on outcomes across the board.

The idea of directing the focus of education policy to teachers and teaching practices is not new. OECD reports have highlighted the need for evaluation and assessment frameworks for school improvement to incorporate an emphasis on engaging teachers and improving classroom practice (OECD 2011, 2013c). In Australia, a national collaborative project between jurisdictions on school performance improvement frameworks indicated that building teacher and principal capability, and use of data in schools and in the classroom, were some of the factors important to school improvement (DEEWR 2010). In terms of ECEC, the key role of staff in child development and learning has been noted by the OECD (2012) but, as mentioned, more evidence is needed in the Australian context.

Overall, the evidence indicates that a bottom-up approach that looks at what works best within education settings is necessary to drive improvements in education outcomes. In this context, there are two key areas to focus on. The first key area involves the creation of high-quality evidence on what works best to improve education outcomes. The existence of this evidence is necessary but not sufficient to improve outcomes. Therefore, the second key area involves meeting the needs of educators in applying education evidence. This may involve an emphasis on effective translation of the evidence into practical material for teachers, training and development, and research into knowledge mobilization (chapter 7).

There are gaps in both of these areas in Australia's education evidence base. Multiple inquiry participants have highlighted gaps in the Australian evidence base about the effectiveness of programs and policies and what works best to improve student outcomes. For example:

... [there is] a continued dearth of evidence about what makes a difference to children's educational, health, and wellbeing outcomes. (Fraser Mustard Centre, sub. 52, p. 2)

There is a lack of high quality evidence of the actual learning impact of approaches and programs in schools. (SVA, sub. 59, p. 17)

... there is still only a relatively limited Australian evidence-base to inform policy decision-making. As a consequence, there has been a strong reliance on international evidence that is often dated, or not directly transferable to the Australian context. (RIPPLE, sub. 45, p. 2)

Social Ventures Australia (sub. 59, p. 17) also acknowledged the gaps in the use of evidence by teachers and staff:

There is a gap in stimulating and meeting the 'demand side' of evidence use; the needs of frontline professionals who ultimately deliver the learning impact.

Speech Pathology Australia (sub. 35, p. 12) highlighted the importance of dissemination and application of evidence, suggesting that consideration be given to how it is translated into teaching practices in schools.

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To fill these gaps in the education evidence base, there needs to be a clear policy direction that supports a bottom-up approach to education data and evidence. Education research has to be relevant to the requirements of decision makers (including in schools and governments), and research findings must be disseminated in a way that is useful to them. All decision-makers should be encouraged to implement evidence-based practices and policies. Further discussions of the creation and use of evidence, including ways of filling these gaps, are presented in chapter 7.

### **3.5 Addressing issues in the education evidence base**

This chapter has identified a number of ways in which the Australian education evidence base could be improved, including through addressing issues with the quality and content of data. Approaches to achieving these improvements include:

- improving the quality of existing data so that it more effectively meets its purposes
- collecting new data (where the benefits exceed the costs) to support the creation of evidence
- improving access to data and facilitating data linkage (including between sample survey datasets and larger datasets) to promote the efficient use of data and reduce the burden of collecting or providing data multiple times
- implementing a policy direction and framework for the creation of evidence relevant to decision makers in the education system
- building capacity and capability to use data and to create and use evidence
- improving the dissemination of evidence to decision makers in the education system
- developing new or existing institutions to support the aforementioned processes.

This chapter has discussed the issues that need to be considered in deciding whether improving the quality of data or collecting new data are appropriate ways forward. Remaining issues are discussed in the following chapters.



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## 4 Data collection, processing and reporting

### Key points

- Schools and early childhood education and care (ECEC) providers, and their staff, bear a significant burden collecting and processing a large volume of data to fulfil government requirements.
  - Differences in resourcing across education systems and geographic locations mean that the burden is not shared equally.
- Government reporting requirements should accommodate schools and ECEC providers with inferior access to technology, including those in remote areas with poor internet access.
- Unnecessary duplication in data collection and processing adds to the burden on schools and ECEC providers.
- Smart use of technology can reduce duplication and improve data quality, including timeliness.
  - Expanded use of information and communications technology (ICT) systems can reduce manual processing and improve information sharing within schools and ECEC providers so that data need only be entered once.
  - Implementation of interoperability standards can facilitate the exchange of data between schools, school system authorities and governments.
  - A national approach to student identification would make it easier for information about a student to follow that student as they move from one education provider to another, although it is unclear whether the benefits justify the costs.
- Changes to reporting requirements should be infrequent, as there are costs associated with altering systems for data collection and processing (including ICT systems) to meet new requirements.
  - Governments should allow sufficient time between the announcement of changes to reporting requirements and when they come into force, to allow schools and ECEC providers to respond without incurring excessive costs.
- Inadequate staff training in data collection and processing practices can lead to a greater burden on staff and compromise data quality. Educators and administrative staff may need additional training, including in the use of technology.
- Increasingly, technology is being harnessed to improve the accessibility and usability of data available to educators, parents and the community.

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Compliance with government reporting requirements in the education sector involves significant costs. This burden falls on schools and ECEC providers, their staff (including educators), and parents and students. Resources need to be devoted to tasks involved with data collection and data processing, and the way these tasks are carried out affects data quality (including timeliness, accuracy and consistency (discussed in chapter 2)). Compliance costs could be reduced through improvements to data collection and processing.

## **4.1 Data collection and processing issues**

### **The data collection and processing burden**

The data collection and processing burden on schools and ECEC providers is significant, and several stakeholders considered that the burden has been increasing over time (for example, IEUA, sub. 18, p. 4). Because they are spread across a large number of data providers, these compliance costs are less readily observable than the administrative costs borne by government agencies receiving data. Data providers are also exposed to the cumulative costs from having to supply data for multiple collections.

Part of the compliance burden is borne by staff, predominantly administrative staff, but also educators. Specifically, staff must spend time carrying out data collection and processing tasks, often without a reduction in other duties. The burden of data collection and processing is thus partly hidden, as the resource opportunity costs are not wholly and transparently accounted for. A range of inquiry participants' views on the burden of data collection on staff is presented in box 4.1.



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#### **Box 4.1      Participants' views on the time burden of data collection**

Australian Primary Principals Association (sub. 64, p. 1):

Gathering data “distracts” teachers from their work. Regardless of the value in coordinating the national education evidence base, primary school principals would be deeply concerned if teachers and students were to be forced to expend additional time and energy on the data collection task. The provision of additional resources to ameliorate this expenditure would not alter the finite nature of contact time between students and teachers at school. [The Australian Primary Principals Association] believes classroom time is precious and should be devoted to learning.

School of Education and Professional Studies, Griffith University (sub. 76, p. 3):

... administration of national standardised testing, such as [the National Assessment Plan — Literacy and Numeracy (NAPLAN)], has significant costs, not only in terms of financial costs, but also opportunity costs for other curriculum when schools focus on NAPLAN preparation.

Independent Education Union of Australia (sub. 18, p. 4):

... the monumental growth in data collection, required by governments (invariably tied to school funding), has resulted in significant increases in workload and red-tape in schools with major work intensification issues being faced by [Independent Education Union of Australia] members as a consequence.

Independent Education Union of Australia — Queensland and Northern Territory Branch (sub. 21, p. 2):

For those who work with students in early childhood education and schools, the net effect is an ever-expanding list of tasks that are peripheral to the core business of teaching and learning and an expectation that these can be performed in the absence of any meaningful industrial provisions such as release time, access to professional development or even relevant and adequate resources.

The capacity of school and ECEC providers to collect and process data is not uniform due to resourcing differences across both sectors (box 4.2). The capacity of schools and ECEC providers to fulfil their reporting obligations depends partly on the extent to which they receive centralised administrative support, either as part of a school system (government or Catholic-systemic schools), or as part of a network of ECEC providers. In Queensland and Tasmania, for example, all government schools have access to comprehensive ICT systems — OneSchool and Ed<sup>i</sup> respectively — which assist these schools to fulfil their data collection and processing requirements (section 4.2). Size matters too. Larger schools and ECEC providers with dedicated administrative staff will typically have a greater capacity than smaller education institutions (box 4.2).

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## Box 4.2      **Participants' views on the uneven burden of data collection**

National Catholic Education Commission (sub. 49, p. 8):

The impact of the costs of [additional data] collections will often be greater for Catholic schools than it will be for government schools. This is, in part, because of the devolved governance arrangements of Catholic schools. Although Catholic schools devote considerable time and resources to meeting reporting requirements, they do not have the staff and resources that the government sector has at its disposal.

Independent Schools Council of Australia (sub. 39, p. 4):

Unlike other sectors, most Independent schools operate autonomously. They do not rely on central bureaucracies or system authorities and are individually accountable to their parent and school communities. This means that data requests are made directly to the schools themselves and that schools are often required to provide the requested data regardless of what internal resources they have in place.

There is great variance across Independent schools in terms of how they manage the collection of data for national and jurisdictional purposes. Larger schools often have sophisticated software packages and clearly defined processes with dedicated administrative staff able to collate data. For other schools it may be the responsibility of the office bursar or even for small schools, the school Principal, to ensure relevant data are collected and submitted.

Australian Childcare Alliance NSW (sub. 28, p. 6):

Smaller [centre-based ECEC] services will find additional evidence collection requirements more difficult to administer relative to larger services that may have additional team members or centrally located administrative staff to assist with data collection.

Telethon Kids Institute (sub. 15, p. 7):

[The] lack of resourcing [associated with data collection] is particularly acute in the early childhood education and care sector which operates on tight margins and generally has limited administrative support compared to schools.

Schools' and ECEC providers' access to technology also affects their capacity for data collection and processing. This is because they are expected to provide data to governments and school authorities electronically, often through online portals. A range of inquiry participants pointed to a 'digital divide' — a gap between those with and those without sufficient access to computers and the internet (box 4.3). In particular, education providers in regional and remote areas tend to incur higher costs meeting their data collection and processing obligations, because of the cost and availability of reliable internet connections.

Access to technology may also affect data quality. The Independent Schools Council of Australia (sub. 39, p. 9) said that limited internet access 'has resulted in time delays for some schools in their ability to submit data for national collections where an upload of data is required'.

The National Assessment Plan — Literacy and Numeracy (NAPLAN) will move online from 2017, with NAPLAN tests completed using a computer or tablet instead of a pen and paper. Several participants were concerned that technology issues meant that some schools will not be ready for NAPLAN online, highlighting the importance of making provisions for schools without adequate access to the necessary technology (APPA, sub. 64, p. 5; ISCA, sub. 39, p. 9; NCEC, sub. 49, p. 7).

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### Box 4.3 Participants' views on the digital divide

National Congress of Australia's First Peoples (sub. 44, p. 12):

The digital divide may be a barrier to data collection. ICT facilities in remote and very remote areas may be limited. Limited access and facility with ICT may also be an issue to the extent that parents, carers or community leaders may be called upon to provide data.

Telethon Kids Institute (sub. 15, p. 16):

Not all rural and remote locations enjoy the level of access to the mobile network and internet that metropolitan areas expect. Some communities have no mobile network coverage and internet bandwidths may preclude the use of some software. Bandwidths can also vary at different times. In some locations IT service support may be many hours' drive away and very expensive. Funding available to independent, remote community schools is very limited.

National Catholic Education Commission (sub. 49, p. 8):

... [A]ccessibility and adoption of technology is a difficult endeavour for Catholic schools in regional and remote areas such as the Kimberley, parts of the Northern Territory and Queensland. For example, remote Catholic schools in the Kimberley currently rely on satellite technology to transmit enrolment and attendance data, which is an impractical way of conveying information. The cost of data systems and access to broadband internet in remote areas — especially for non-government schools — can be prohibitive.

Independent Schools Council of Australia (sub. 39, pp. 8–9):

Independent schools in regional and remote areas are limited in terms of available internet service providers and often access can prove to be a costly item in a school budget. Access to satellite ground stations as part of the National Broadband Network will take time to provide extensive cover across the country. The impact of costs to communities to access this service is still unknown.

Australian Council for Education Research (sub. 32, p. 3):

There remain problems of technological capability in schools: older metropolitan schools may not be as technologically capable as other schools, and they may experience similar difficulties to rural and remote schools. Some regions of Australia, urban and rural, do not have access to the national broadband network; some schools do not have adequate technology support; some schools have older technology equipment that cannot handle modern demands.

## Duplication

Duplication in data collection or processing adds to the burden on data providers — including schools and ECEC providers, staff and parents. The NSW Government (sub. 79, p. 3) highlighted the breadth of costs associated with duplication:

... [D]uplication of data collection should be avoided, noting the significant expenses involved in collecting, capturing, processing, managing, reporting and storing.

Other participants expressed frustration at the time and effort spent submitting the same or similar data to multiple governments, or government bodies (for example, APPA, sub. 64, p. 2; ACA NSW, sub. 28, p. 8; CYDA, sub. 66, p. 12; CCCC NSW, sub. 51, p. 4; School of Education and Professional Studies, Griffith University, sub. 76, p. 4). Even where the required data are similar, the burden on data providers may be compounded by differences in data specifications. The Northern Territory Government (sub. 77, p. 3) stated in this regard:

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Data provided to national data collection authorities is often similar in nature; however the business rules<sup>3</sup> surrounding both the initial data capture and final reporting of data can vary greatly. This places a large administrative burden on jurisdictions ...

Duplication in data provision obligations can occur where departments or governments are unable or unwilling to share the information they gather (or to share information in the form preferred by users (box 4.4)). Privacy or other legislative restrictions on the use and sharing of data may prohibit data custodians from sharing information (chapter 5). For example, specific education legislation may prevent the release of personal information collected for a specific primary purpose. Governments (or departments) may in other cases be unwilling to share information because that information could be detrimentally used to assess performance or compare jurisdictions (chapter 6).

In each of these cases, collection of substantially similar information is not necessary to fulfil governments' information requirements, and imposes an unnecessary additional burden on data providers. However, in some cases schools and ECEC providers are legitimately required to supply substantially similar information to different governments (or government bodies). For example, a school may be required to supply information on students with disability to both the Australian Government and to a state government, using different definitions of disability. This duplication may be reasonable if implementing consistent definitions across the two collections is very costly or difficult, for instance if government funding formulas rely on these different definitions, and would have to be adjusted if the definitions changed. Chapter 3 discusses the costs and difficulties of achieving consistency across data collections in more detail.

#### **Box 4.4      The City of Boroondara's data collection activities**

The City of Boroondara collects a lot of data from schools and ECEC providers within its jurisdiction, duplicating other government collections (City of Boroondara, sub. 20). The City acknowledged that: 'streamlining data collection would presumably provide some benefits and reduce duplication of effort for services and schools and all levels of government ...' (City of Boroondara, sub. 20, p. 5). However, the usefulness of national data collections to the City is undermined by: the City's inability to analyse national data collections by service, suburb and municipality; privacy issues; and (especially) insufficient data timeliness. This has led the City to conclude: 'that national data collection is unlikely to completely replace local data collection currently undertaken by council' (City of Boroondara, sub. 20, p. 4).

Duplication in data collection and processing may also occur because of inefficient administrative processes. Schools and ECEC providers already collect for their own purposes much of the information they are required to provide to government. But data for internal purposes and data for reporting purposes have traditionally been dealt with separately. For example, all Independent schools are required to report aggregated attendance data for two

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<sup>3</sup> In this context, the Commission understands 'business rules' to mean the way in which data must be captured and reported.

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‘reference weeks’ each year to the Australian Government as part of the Non-Government Schools Census. Independent schools may also collect attendance data separately for shorter time periods (such as for every class) for their own internal purposes.

In addition to the burden imposed on schools and ECEC providers, parents may also bear part of the burden of data duplication. For example, when their child is first enrolled, parents provide a large amount of information to their childcare centre or preschool (appendix C). They will likely be required to provide the same information again when their child enters the Foundation Year of primary school, and again when their child moves between schools, including when they move from primary to secondary school. This inefficient duplication is due to privacy and related legislative restrictions, and the ways in which schools manage information (including that transferring data between ECEC providers’ and schools’ ICT systems may not be straightforward). A unique student identifier could reduce duplication of this sort (section 4.2).

## **Changing reporting requirements**

Changes to reporting requirements impose additional costs on those providing data, particularly when these changes are frequent. For example, the Independent Schools Council of Australia (sub. 39, p. 4) stated that it is ‘extremely difficult for some schools to make changes to their processes or to add new collections without significant extra effort and cost burden at the school level’. Changes also undermine the comparability of datasets over time.

Where changes are made to reporting requirements, schools, school systems and ECEC providers (or the private vendors supplying them) need sufficient time to make changes to ICT systems. The Independent Schools Council of Australia (sub. 39, p. 9) called for at least 12 months to respond to changed reporting requirements to allow for changes to school software systems:

It has been noted that where enough lead time is provided to vendors of [the commercial administrative software used by schools], alterations can be made to accommodate changes in data collections, such as student attendance, at relatively low cost to schools. However, where there is insufficient lead time, schools will either be unable to use software that incorporates the changes due to time constraints or only at a high cost if a vendor has to make changes extremely quickly.

The Association of Heads of Independent Schools of Australia (sub. 50, p. 4) endorsed this submission:

... a minimum 12 months’ lead time before data collection or reporting changes are introduced is necessary if commercial software providers and schools are to be able to adapt existing tools and systems to new arrangements.

The Commission has been conscious of the compliance burden when framing its draft recommendations in this report.

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## Manual processing

Manual processing — such as converting data from one format to another, collating information, copying information or transporting information — imposes a time burden on those responsible. Excessive manual processing can be due to either duplication (discussed above), or underuse of automated processing methods. For example, schools and ECEC providers that rely on manual accounting methods, rather than using accounting software, are likely to find it much more time-consuming to meet their reporting requirements for school financial information. Expanded use of ICT systems, standards that facilitate the exchange of data between systems, and a national approach to student identification could reduce the burden associated with manual processing (section 4.2).

Excessive manual processing of data also compromises data quality. Data may be missing or incorrect due to processing errors, such as ‘coding errors on data entry, ... misalignment of data columns, [or] slippage from one computer system to another’ (LSIA, sub. 48, p. 12). Manual processing of data allows more opportunities for these types of errors to occur.

Finally, manual processing can impede data timeliness. A prominent example is the continued use of pen-and-paper tests for NAPLAN. These tests require time-intensive manual processing, including the marking of each student’s written task by a human marker. Students’ 2016 NAPLAN results will be released to schools 3–4 months after students sit the tests (ACARA 2016g). Several participants argued that NAPLAN results would be more useful to schools if they were available sooner (AHISA, sub. 50, p. 3; LSIA, sub. 48, p. 5). The timeliness of NAPLAN results should improve significantly with the move to NAPLAN online from 2017.<sup>4</sup>

## Insufficient staff training

The burden of data collection and processing on staff will be greater if they have not received relevant training. Staff that are not adequately trained spend longer performing collection and processing tasks and are more likely to make mistakes that impact on data quality.

A variety of skills are required for effective data collection and processing. For example, ECEC staff need to be able to assess children against the learning objectives in the *Early Years Learning Framework* (chapter 1) and school teachers must assess students against particular learning criteria and administer standardised assessments to students (including setting up computers correctly for online tests). Where data must be provided to a school authority or government in a particular electronic format, staff may also be required to

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<sup>4</sup> Schools administering NAPLAN online will receive preliminary results about two weeks after the end of testing (compared with the 3–4 months it currently takes for schools administering pen-and-paper NAPLAN tests to receive results) (ACARA 2016c, 2016e, 2016f).

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convert data from one format to another. (Skills related to the use of education data for research and related purposes are discussed in chapter 7.)

Data quality can be compromised if staff responsible for collecting and processing data do not have the requisite skills. The Telethon Kids Institute (sub. 15, p. 9) stated that:

The accuracy and completeness of data will depend on skill levels, individual biases and work pressures of staff completing administrative forms. The availability of staffing and administrative support will also have a significant impact on the data quality.

Similarly, Children and Young People with Disability Australia (sub. 66, p. 7) considered that limited staff expertise and training were affecting the quality of data collected about students with disability:

[The Nationally Consistent Collection of Data on Students with Disability] ostensibly relies on teachers to make assessments regarding the level and types of adjustments students may require despite widespread acknowledgment of the limited expertise held and training available ...

Some stakeholders were concerned in particular with the need for staff training in the use of new technologies. For example, the Australian Childcare Alliance NSW (sub. 28, p. 9) received multiple reports of state regulatory officers equipped with iPads to aid their data collection, who were ‘quite open about the fact that they did not know how to use them’. (The Australian Childcare Alliance NSW (sub. 28, p. 9) said that this issue has since been resolved.) Inadequate training may mean that investment in technology is wasted, or even counterproductive in that it leads to a greater data collection burden or worse quality data.

## **4.2 Improving data collection and processing**

There is a range of ways to improve data collection and processing, and reduce the associated compliance burden. These mainly involve: using technology to minimize duplication (including through better use of existing data) and reduce errors from manual processing; more effective management of reporting requirements (including accommodating resourcing difference across education providers); and providing training for staff involved in collection and processing.<sup>5</sup>

### **Smart use of technology can aid data collection and processing**

There are potentially large gains from the smart use of technology. A range of participants supported this view, arguing that better use of technology could reduce the burden of data

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<sup>5</sup> Some stakeholders stated that the burden of data collection and processing would also be reduced if data were collected using a sample of students, rather than the population. For example, the Independent Schools Council of Australia (sub. 39, p. 11) argued that sample testing is less invasive and disruptive in schools. As discussed in chapter 3, surveys and testing programs administered to samples of students can significantly increase the breadth of information collected and provide for high-quality evidence and at lower cost than censuses.

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collection and processing, and improve data quality and timeliness. Support came from the Australian Primary Principals Association (sub. 64, p. 5); Australian Council for Education Research (sub. 32, p. 3); Catholic Education Diocese of Parramatta (sub. 23, p. 4); Early Start, University of Wollongong (sub. 26, pp. 4–5); and the National Catholic Education Commission (sub. 49, p. 8). The latter stated that:

Technology can play an important role in achieving timely and quality data ... [and] should enable schools to collect and provide data more easily, thus reducing the administrative burden. (NCEC, sub. 49, p. 8)

More specifically, the expanded use of ICT systems can reduce the data collection and processing burden on schools and ECEC providers, as will the implementation of national standards to facilitate data transfer between schools, and from schools to governments to meet reporting obligations. A national approach to student identification would make it easier for information about a student to follow that student as they move from one education provider to another (discussed below).

### Expanded use of ICT systems

Schools and ECEC providers are increasingly using sophisticated ICT systems to manage information (box 4.5). ICT systems combine ICT hardware and software packages to record and manage data, and perform administrative tasks. For example, many schools use ICT systems for enrolment, attendance, school finances and accounts (including financial transactions with parents), scheduling timetables, recording assessment, managing curriculum and teaching resources, and for student wellbeing and behaviour management. Government bodies receiving data from schools and ECEC providers also use ICT systems to manage these data.

#### Box 4.5      **Edi**

*Edi* is an ICT system used by all Tasmanian government schools, launched in 2014. It provides school and departmental staff with instant access to school and individual student data through a single portal. It is accessible to school staff anytime, anywhere and by any device (including phones). Individual student data provided are both historical and real time, allowing teachers to access longitudinal data right back to a student's initial school entry, as well as up-to-date information about attendance, behaviour and academic results (*edi* data are loaded from source systems every night). School leaders and system leaders can also access information at a student, class, school and system level.

Currently, *edi* is only used by government schools in Tasmania. When a student transfers between government schools, leaders and teachers have immediate access to data about that student's history. Data are not available on students who move to a Tasmanian government school from a non-government school or from interstate.

*Source:* Tasmanian Government (sub. 75, pp. 3–4).



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Expanded use of ICT systems can reduce duplication in data collection and processing in a number of ways. For example, information about a student's attendance or assessment can be viewed and edited by all relevant staff, without having to create additional separate records. The ability to better share data within schools and ECEC providers using ICT systems means that data need only be entered once. Having a single source of truth for information also avoids the costs and issues involved in reconciling conflicting data.

The burden of duplication on schools and ECEC providers could also be reduced through better use of existing data collections, including through greater sharing of data between jurisdictions and better data linking (for example, ACER, sub. 32, pp. 3–4; ACA NSW, sub. 28, p. 8; ISCA, sub. 39, p. 6; SA NT DataLink, sub. 57, p. 4). The sharing and linking of education data are presently constrained by a range of legislative restrictions and a risk-averse culture among data custodians that mitigates against greater data access. These constraints would need to be addressed before existing data collections can be used to reduce duplication. Options to address these and other constraints are discussed in more detail in chapters 5 and 6.

ICT systems also reduce the need for manual processing — and the associated burden — through automated processing of data. For example, some schools are required to provide financial reports for both the calendar and financial year, to satisfy the requirements of different departments or governments. If financial transactions are recorded at a relatively granular level (such as monthly) using accounting software within an ICT system, then the software can aggregate these transactions to provide financial reports for both the calendar and financial year without additional manual processing. Another example involves the move to NAPLAN online which will allow for more automated processing, including automated scoring of the writing task (ACARA 2016f).

The expanded use of ICT systems could also include more real-time data collection and processing. Several stakeholders pointed to the growing opportunities to collect and process data in real time — including using mobile devices such as iPads — to minimise duplication and improve data timeliness (ACECQA, sub. 11, p. 13; APPA, sub. 64, p. 5; Early Start, University of Wollongong, sub. 26, p. 4). For example, staff can enter attendance data directly into a school's ICT system while in class, avoiding the need for manual processing later. Discussing the National Quality Agenda IT System, the Australian Children's Education & Care Quality Authority (ACECQA, sub. 11, p. 13) described how both New South Wales and Queensland:

... have developed tablet and iPad applications which allow their officers to more efficiently record assessment and rating evidence while visiting education and care services. Data from these applications can be imported directly into the [National Quality Agenda IT System], increasing efficiency and reducing the administrative and financial costs of data entry.

Several stakeholders also suggested that the new types of data being recorded in ICT systems by schools and ECEC providers could provide additional valuable data for researchers and policy makers in the future (APPA, sub. 64, p. 3; SVA, sub. 59, p. 21). For example, the Australian Primary Principals Association (sub. 64, p. 3) suggested that

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student assessments collected in the normal course of teaching and learning could be aggregated into valuable datasets.

## Interoperability standards

Interoperability refers to the ability of ICT systems to communicate, exchange data and use the data that have been exchanged. It relies on technical standards, ‘which act like a common rail gauge for sharing data between ICT systems, allowing information to be exchanged accurately, efficiently and economically’ (NSIP 2016c).

The Australian, state and territory education ministers have endorsed the Systems Interoperability Framework (SIF) as the preferred interoperability standards for exchanging data across the Australian schools sector (ECEC providers are not currently included under this agreement) (NSIP 2016a). SIF is also supported by school authorities and key vendors of ICT systems and software (NSIP 2016b). The implementation of SIF across the states and territories is ongoing, supported by the National Schools Interoperability Program.

The adoption of interoperability standards reduces the need for manual processing of data by schools or ECEC providers to fulfil data reporting requirements (including duplicative reporting requirements). The implementation of interoperability standards implies schools will not be required to convert data to multiple different formats before submitting them — reducing the data processing burden and the likelihood of errors being entered into the data.

Interoperability of ICT systems will also facilitate the sharing of student data between schools which could reduce the burden on schools and parents, and boost the information available to schools about their students (particularly new students). For example, when students move between schools, enrolment or assessment information could be seamlessly transferred from the student’s old school to their new school. However, there are legislative and other barriers to data being shared between schools that would need to be addressed (chapter 5). Automated transfers of student data between schools already occur, but only in some jurisdictions. For example, in Queensland when a student moves between different government schools, the student’s prior enrolment information is made available to the new school through OneSchool (QldDET 2012).

There are potentially large benefits of expanding interoperability to the ECEC sector. In particular, it would facilitate the transfer of detailed student records between ECEC providers and from ECEC providers to schools.<sup>6</sup> However, expanding interoperability to the ECEC sector at this time may hinder the ongoing implementation of SIF in schools.

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<sup>6</sup> In some jurisdictions, preschools provide (with parental consent) ‘transition statements’ to schools containing summary information about students entering Foundation Year (appendix C).

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## Unique student identifier

A unique student identifier (USI) is a student number that remains fixed and is used by multiple education providers. It makes it easier for information about a student to follow that student as they move from one education provider to another. A USI can reduce duplication, as students or parents do not need to provide the same information again each time the student is enrolled with a new provider. It can also improve education providers' access to historical student records, so they can cater better to student needs. In addition to these operational benefits of tracking students, a USI may help with data linkage for the purpose of research (discussed in chapter 6).

Several participants touched on the benefits that would be delivered through a USI that enables student tracking across education pathways (from early childhood), systems and jurisdictions. The Australian Department of Education and Training (sub. 68, p. 10) detailed a range of explicit benefits in voicing its support for a single student identifier:

An identity management approach that is nationally consistent would provide improved efficiency in administration, higher quality reporting to parents and would support improvements in better sharing of information across education sectors. Enrolment information could be collected once and a student's documentation maintained across their entire child care, early childhood and school education, providing a comprehensive education record for students, parents, schools and systems.

Speech Pathology Australia (sub. 35, p. 14) commented:

Unique Student Identifiers may assist in ensuring continuity of important information about the student between schools and educators to assist the incoming school to best meet the needs of that student. It may also offer efficiencies in reducing duplication of testing (for example, repeated speech pathology assessments) if this information 'follows' the student from one school to another.

Currently, there is no national system of student identification for schools or ECEC. While most jurisdictions use identifiers for different parts of their education systems, only Victoria (box 4.6) and the ACT use a unique identifier across government and non-government schools. Some states, such as Queensland, have an identifier that tracks students in the government school system only.

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#### **Box 4.6 Victorian Student Number**

From 2009, the Victorian Department of Education and Training has issued a Victorian Student Number (VSN) to students in Victoria. The VSN is issued to all students in government and non-government schools, and to students under the age of 25 undertaking vocational education and training. It is not issued to children in ECEC, or to university students.

The VSN provides the capability to accurately detect patterns of student movement through, and departure from, the Victorian education and training system. It was introduced to improve the collection and analysis of timely and accurate data about education in Victoria, so that future investment in education and training could be more reliably planned.

*Source:* VCAA (2016).

The Ministerial Council on Education, Employment, Training and Youth Affairs agreed in 2009 that Australian governments would ‘establish a unique student identifier to track student performance and encourage life-long learning and skill acquisition from the first year of compulsory schooling to post-school education and training’ (MCEETYA 2009, p. 19). This has not happened, but there has been some progress towards this goal at a national level.

In 2015, a nationwide USI was introduced in the vocational education and training (VET) sector. The VET USI was developed to increase transparency by allowing students to obtain a complete record of VET enrolment and achievement history from a single source; assist employers in verifying training completed; and provide governments with a picture of student numbers, duration and student pathways through the VET system (Victorian Government 2013). The Council of Australian Governments (COAG) has previously said it will consider the application of the VET USI to other education and training sectors (ACARA 2013a, p. 35). In higher education, the Commonwealth Higher Education Student Support Number is a unique identifier for all students receiving Australian Government support.

A key purported advantage of a national system of student identification is that it would facilitate the transfer of student information across jurisdictions. While jurisdiction-wide student identifiers (such as those used in Victoria and the ACT) allow student administrative and performance records to be transferred seamlessly across school systems in these two jurisdictions, privacy and other legislative restrictions prevent those records from being transferred (without parental consent) when a student moves interstate. As an indicator of the scale of the geographic mobility issue, in 2015 there were about 58 000 school aged students (aged 5 to 19) who moved interstate (ABS 2016a). This represents less than 2 per cent of the 3.75 million national student enrolments in 2015 (ABS 2016e, table 80a).

From 2006, the Interstate Student Data Transfer Note system has facilitated the exchange of information about students moving between schools in different states (subject to parental consent). However, this system involves significant manual processing, and does not include detailed student information of the kind that could follow students moving between jurisdictions under a national USI system.

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The number of students moving between government, Catholic and Independent systems within jurisdictions appears to be much higher than the number moving interstate. There is limited hard evidence available nationally, but estimates based on the Longitudinal Survey of Australian Youth (appendix C) suggest that about 6 per cent of students change school systems (both within and across jurisdictions) between Year 9 and Year 12 (Commission estimates based on Ryan 2014). While the use of *jurisdictional* student identifiers would certainly help track these particular students as they move between school systems it is not clear how much additional value a national system of student identification would add. A national system would also need to overcome the considerable legislative impediments to the release of personal information enshrined in jurisdictional privacy, education and related Acts (chapter 5).

There would be benefits in a USI that covered children in ECEC as well as students in school and post-school education and training, as noted by the Australian Department of Education and Training (sub. 68, p. 10). It would reduce duplication in data collection as children move from ECEC to school, and could provide schools with rich information about children entering Foundation Year (such as details about any behavioural issues). However, extending a USI to include ECEC would also involve significant costs — such as the administrative costs of centrally allocating and managing a USI for children in ECEC. It is not clear to the Commission at this stage of the inquiry process if the benefits justify these costs. In addition to use of a USI for operational purposes discussed in this section, chapter 6 discusses the use of a USI for data linkage.

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#### INFORMATION REQUEST 4.1

*The Commission seeks further information on:*

- *the costs and benefits of moving toward a national student identifier (compared to jurisdictional systems)*
  - *the feasibility of using the unique student identifier system used in the vocational education and training sector to deliver more comprehensive student coverage*
  - *the costs and benefits of children in the early childhood education and care sector being covered by the same identifier as school students.*
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## **Effective management of reporting requirements can ease the collection burden**

As mentioned earlier, the burden of reporting requirements does not fall equally on all education providers (section 4.1). Providers that do not receive administrative support from a school system or ECEC network, that are small and lack dedicated administrative staff, or that are remote and have poor access to internet services may find meeting reporting obligations particularly burdensome. These issues are not easily resolved but can be ameliorated by ensuring that reporting requirements are sufficiently flexible and managed

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appropriately. In this context, frequent changes to reporting requirements and inadequate staff training increase the burden on schools and need to be considered in advance.

Some participants suggested that additional targeted funding was needed to improve access to technology for the purpose of data collection and processing (for example, SCSA WA, sub. 14, p. 12). The Commission considers that schools (or school authorities) and ECEC providers are best placed to decide how much should be spent on their ICT systems and internet access. This expenditure must be considered in the context of alternative expenditure options and budget constraints, and the benefits of ICT expenditure, all of which vary between schools and ECEC providers. For example, there would be little benefit from a school investing in a system that communicates with parents through an internet application if parents do not have access to the internet — as is the case in some remote and regional communities (National Congress of Australia's First Peoples, sub. 44, p. 12). Whether schools and ECEC providers have sufficient funds to pay for ICT systems and internet access should thus be considered as part of broader funding decisions, which are outside the scope of this inquiry.

Government reporting requirements should accommodate schools and ECEC providers with inferior access to technology, including those in remote areas with poor internet access. Submissions to this inquiry provided some evidence of such accommodation. For example, the School Curriculum and Standards Authority, Western Australia (sub. 14, p. 12) stated:

The Authority collects student registration, demographic, participation and performance data directly from schools. The electronic transfer of this information ranges from the manual upload of .CSV (comma delimited) files or by direct link from school database systems provided by the Western Australian Department of Education in public schools or by software suppliers in Catholic Education and some independent schools. Some schools do not have the resources or expertise to enhance their technologies and hence the Authority's database management system has to allow for this wide range of data transfer technology.

Similarly, the Australian Curriculum, Assessment and Reporting Authority (ACARA, sub. 62, pp. 6–7) has taken a flexible approach to NAPLAN online to allay concerns (noted in section 4.1) that some schools will not be ready:

A variety of solutions are being implemented to enable schools to participate in NAPLAN online in instances where there are issues with limited devices and/or difficulty with access to the internet. For example, the expanded 'window' for testing will allow schools more flexibility in scheduling and accommodates schools which have fewer devices than students.

Changes to reporting requirements must be managed so as to minimise the additional cost of changes on those providing data. In particular, governments should ensure that schools and ECEC providers are not obliged to make changes to their data collection and processing systems (including ICT systems) within inappropriate timeframes. As noted in section 4.1, some participants called for at least 12 months lead time to changes to reporting requirements so that ICT systems can be changed without incurring excessive costs. Announcing changes well before they come into force and allowing a switch over period can

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help reduce the transitional costs. For example, the implementation of NAPLAN online will be staggered ‘over a two-to-three year period’, with timing of participation determined by jurisdictions, school systems and schools, based on readiness (ACARA 2016f).

DRAFT RECOMMENDATION 4.1

Agencies responsible for collecting education data should review and adjust their procedures to reduce the administration costs and compliance burden on respondents, including by:

- to the greatest extent possible, collecting sample, rather than census data
- removing duplication in data collection and processing
- avoiding frequent changes to reporting requirements, but when changes are necessary, allowing sufficient time for respondents to comply with the new requirements.

### Improved training in data collection and processing

Several stakeholders called for additional training or professional development for education staff in how to collect and process data (for example, Early Start, University of Wollongong, sub. 26, p. 5). Some of these stakeholders referred specifically to the need for training in working with technology (ACA NSW, sub. 28, p. 9; National Congress of Australia’s First Peoples, sub. 44, p. 12).

Governments, schools, school system authorities, unions and other bodies in the education sector provide support (including funding) for staff professional development (usually unrelated to data collection and processing) (Aussie Educator 2016). For example, in 2013 the Australian Government launched the Long Day Care Professional Development Programme, which provides funding for professional development for staff in long day care centres. Accredited teachers and early childhood educators may also be required to spend a set amount of time in professional development each year.

Staff need to be adequately trained to ensure that data collection and processing is not overly burdensome, and so that the data provided are of sufficient quality. In particular, there may be a need for additional training when reporting requirements change. The possible need for staff training also points to the need for governments to allow sufficient time between the announcement of changes to reporting requirements and their implementation.

## 4.3 Data reporting tools

In addition to aiding with data collection and processing, technology can assist with the dissemination of those data to education stakeholders; poor reporting of data impairs the

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effective use of data. Governments, school system authorities, schools and ECEC providers are using technology to improve the access to and presentation of data in a manner that is easy to interpret by educators, parents and the community.

Government bodies are making greater use of websites and web-based software to report more data, and to provide them in a user-friendly and interactive way. My School is a prominent example. It provides a variety of information about every school in Australia, and tools that can be used to explore schools' NAPLAN results (box 4.7). In the ECEC sector, ACECQA has begun publishing an online version of its quarterly National Quality Framework snapshot, where users can manipulate and download data (ACECQA, sub. 11, p. 12). Many of these websites are (or will soon become) mobile-friendly, improving access for parents and other data users.

#### **Box 4.7      My School**

The My School website, launched in 2010, provides educators, parents and the community with information about each of Australia's schools in a readily accessible format. My School contains a range of information about schools including NAPLAN results, financial information and attendance rates (ACARA 2016d).

My School includes tools that allow users to explore schools' NAPLAN results. For example, results can be viewed in different formats, and for different subjects, year levels and years. Users can also see the change in results over time as a particular cohort progresses, such as the change in a cohort's reading scores between Year 3 and Year 5. Results can be compared with other schools serving students from statistically similar backgrounds. Several state governments provide additional software to schools for the purpose of analysing NAPLAN results (AHISA, sub. 50, p. 3). The Independent schools sector has invested in similar software (Thian 2010).

Many schools and school authorities have developed or purchased software that allows teachers and school leaders to analyse student, class and school data. This software sometimes forms part of schools' ICT systems (discussed above). The Western Australian Government, for example, provides the Student Achievement Information System, a web-based graphing application that assists teachers and other staff to analyse student achievement (WADET 2010a). The Association of Heads of Independent Schools of Australia (sub. 50, p. 3) argued that the increasing tendency of schools to develop or invest in easy-to-use analysis tools 'mean teachers do not need high level IT expertise to manipulate the data or extract the information they need, and therefore minimises professional learning costs'.

These developments and initiatives that governments and schools are adopting to make the reporting of data collections simpler to use and easier to interpret by educators, parents and the community are welcomed by the Commission.



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## 5 Access to education data

### Key points

- The public interest benefits of allowing greater access to education data are substantial but they need to be balanced against the legitimate risks to individuals and governments associated with misuse of those data.
- Getting the right balance between access and avoidance of exposure to adverse outcomes is hampered by the complexity of the legislative environment governing the management of personal information and an (understandably) risk averse culture among data custodians and ethics approval committees.
- There is a misperception that privacy legislation acts as a barrier to disclosure and sharing of education (and other) data whether or not those data contain personal information. Accordingly, there is scope to maximise the usefulness of existing education data while respecting the intent of privacy legislation.
- Most states and territories allow exceptions to privacy protection of personal information for purposes deemed to be in the public interest (including education research). They also permit sharing of data containing personal information with other jurisdictions provided those jurisdictions have substantially similar privacy principles; effectively, mutual recognition.
- Differences in Australian and state and territory education Acts and other related laws impose greater limits on the ability of education data custodians to release data that contain personal information. These differences can prohibit entire data collections from being accessed, or prohibit disclosure of component cohorts of the same dataset. In other cases, legislation is silent on whether and how personal information is to be managed.
- Greater uniformity of laws governing the management of personal information would go some way towards reducing the complexity of the legislative environment. This could be achieved by amending existing legislation so that it provides for use and disclosure of personal information in specified public interest circumstances. Alternatively, overarching legislation that allows for use and disclosure irrespective of the provisions contained in other Acts or laws could be enacted.
- Greater access to data would also be facilitated if processes for collecting personal information were amended to incorporate formal consent and/or notification for the use and disclosure of personal information at the initial point of collection.
- Following the lead from the health domain, a system of mutual recognition of approval decisions by data custodians and ethics committees would make the process of accessing education data faster and cheaper.

There is a considerable amount of education and other data already collected and the benefits of gaining access to that data by groups with an interest in improving education outcomes (academic researchers, teachers, schools and policy makers) are substantial. But data access is being impeded by the complexity of the legislative environment governing

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the management of personal information and an understandably risk averse culture among data custodians and research ethics committees. A number of participants referred to these impediments in submissions to this inquiry (box 5.1).

### **Box 5.1      Participants' views on data access impediments**

The Population Health Research Network (sub. 24, p. 3) summarised the nature of the data access problems in the following terms:

Australia has a complex legal framework governing the collection, use and disclosure of data for research. There is also variation between jurisdictions and in the clarity and terms of individual legislation. Whilst in most cases the empowering legislation permits the use and disclosure of data for research, provisions in the various education statutes may limit access to education data and each research project may need to be considered on a case by case basis.

Similarly, the Tasmanian Government (sub. 75, p. 5) pointed to differences in privacy legislation and the impact this had on cross-jurisdictional cooperation:

The lack of uniformity of privacy legislation across states has certainly impacted upon the willingness of jurisdictions to participate in cross-jurisdictional research and projects which have the capacity to enhance educational outcomes. Through this [PC] inquiry, the review of national privacy arrangements would potentially remove some significant barriers for some jurisdictions. It should be noted that these barriers are often perceived rather than real.

The Australian Institute for Teaching and School Leadership (sub. 5, p. 3) nominated privacy issues as a barrier to developing a dataset that would improve education outcomes:

A more comprehensive approach to teacher workforce data has great potential to improve outcomes for students. However, issues such as privacy, ownership of and access to the data, and consistency with the legislative basis for its collection all require resolution.

As one of a number of consequences, the submission by the Australian Research Council Centre of Excellence for Children and Families over the Life Course (sub. 9, p. 3) suggested differences in privacy laws were a significant obstacle to developing a national education evidence base:

Differences in data governance structures and privacy legislation across states ... are associated with a raft of issues that make collating consistent data across the country very difficult.

Legislative complexity has resulted in approval authorities adopting what some described as a cautious approach to granting access to data. The Australian Curriculum, Assessment and Reporting Authority (sub. 62, p. 5) said in this regard:

Decisions about sharing and access to de-identified personal information are often made in the absence of certainty around the application of privacy legislation, leading to conservative decision making.

The Queensland University of Technology Faculty of Education (sub. 19, p. 14) highlighted problems with ethics approval processes and the requirement to gain individual consent:

Australian educational researchers have difficulty with jurisdictional ethical applications and consent rates that require parents to complete paper consent forms for students to participate in research.

The National Catholic Education Commission (sub. 49, p. 6) referred to the tendency to treat privacy legislation differently in the Australian education sphere than elsewhere:

Privacy legislation is an important consideration when developing a national education evidence base. However, there is an inclination in the education sector to accept privacy barriers as inevitable in a way that does not apply overseas or, for example, in the health sector locally.

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Together, these and other factors represent significant challenges to data access. While there are a number of alternative approaches available to overcome those challenges, the potential success of those alternatives depends on the extent to which they change the underlying incentives facing education data custodians and ethics approval authorities. Current incentives operate to discourage access because the benefits of improved education research and policy development are spread widely across the community while the consequences of adverse outcomes (from potential misuse of data) are borne primarily by the custodian (and through them the individuals whose personal information has been compromised).

DRAFT FINDING 5.1

There is a considerable amount of education and other relevant data already collected, but there are impediments to its access and use.

## 5.1 Privacy regulation impedes access to education data

In considering privacy issues, a distinction needs to be drawn between administrative, survey and other data collections that contain personal information that can be used to identify an individual (such as name, address, date of birth) and data collections that do not contain such personal information (de-identified or non-identified data). Privacy laws do not apply to de-identified data.<sup>7</sup>

Moreover, while certain research purposes are suited to using de-identified data, for others (particularly those based on linked data sets) the inclusion of personal information may be needed. For example, some participants argued that datasets linked using de-identified data suffered from data quality problems. According to the Telethon Kids Institute (sub. 15, p. 7) (an organisation with decades of experience in data linkage activities):

... a statistical linkage key [SLK] is not sufficient to enable good quality, robust linkage. Data should include as much information as possible to inform (including name, address and date of birth) as there are often errors in point of collection, leading to incorrect SLKs. These errors lead to incorrect or missing matches when linking data. Having full identifying information reduces the likelihood of this error. There are many ways that linkage can be achieved, using identifying information that protects individual privacy.

But this view was not universal among participants with some commenting that sophisticated statistical linkage methods can result in a very high proportion of matched records.

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<sup>7</sup> The Australian Curriculum, Assessment and Reporting Authority (sub. 62) suggested that privacy laws remain key obstacles to data sharing even if data are de-identified because of the potential for re-identification of individual students.

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Issues of data quality aside, there is a separate issue of whether identified or ‘granular’ data are required in situations where insights into individual school and student improvement are needed to guide targeted interventions. This need for identified data to underpin targeted research and policy interventions was supported by a number of participants including the Catholic Education Diocese of Parramatta (sub. 23, p. 2), Goodstart Early Learning (sub. 70, p. 9) and the Grattan Institute (sub. 61, p. 9). While the Australian Government Department of Education and Training (sub. 68, p. 4) did not specifically argue for the use of identified data it did refer to the need to support and monitor the progress of individual students:

The purpose of an education evidence base is to support and evaluate progress towards national education objectives as well as progress for an individual child or student. This is achieved through monitoring of educational outcomes for children and students to better inform policy and programme development and evaluation.

Accordingly, in certain circumstances access to personal information may be preferred by education researchers, policy and service delivery agencies to the de-identified alternative. It may therefore be appropriate to provide scope for such disclosure provided that the legitimate privacy interests of individuals are safeguarded (see below). This could involve a two-tiered disclosure regime in line with the suggestion by The Smith Family (sub. 60, p. 12):

In addition to the data needing to be granular, there is also the need for it to be able to be aggregated. For research and evaluation purposes, ideally data is available at the unit record level (de-identified), with sufficient information such as SES [socioeconomic status], age, gender, location etc to enable the data to be analysed in different ways depending on the research or evaluation question.

But some participants were opposed to disclosure of personal information on the grounds that an individual’s right to privacy was paramount. The School of Education and Professional Studies at Griffith University (sub. 76, p. 4) used the processes governing medical research as a benchmark:

... we strongly suggest that ethical protocols – for example, similar to human research ethics protocols – are established. For example, these protocols should ensure that aggregated, de-identified data only be used to ensure privacy. Similarly, permission protocols would need to be established, including providing individuals with information about the potential ownership and use of their data.

This position invites a question about community attitudes towards privacy issues in the context of using personal information to conduct public interest research. The submission by researchers from the Australian Institute of Family Studies presented evidence on consent rates it obtained for a cross-section of administrative, transactional, census and performance datasets that were linked to the Longitudinal Study of Australian Children (table 5.1). As shown, consent rates exceeded 90 per cent for all health and education data sets. According to Edwards and Siphthorp (sub. 73, p. 5):

This provides suggestive evidence that the general population, or at least the general population of parents of children, support the linkage of administrative data for research purposes.

The considerable resources (in terms of time and financial cost) required to obtain informed consent needs to be viewed in this light especially when privacy legislation does not mandate an absolute standard of informed consent.

**Table 5.1 Consent rates for data linked to Longitudinal Study of Australian Children (LSAC)**

Per cent

<i>Linked data</i>	<i>LSAC wave</i>	<i>Consent rate</i>
Medicare Benefits Schedule	1	97.0
Pharmaceutical Benefits Scheme	1	97.0
Australian Child Immunisation Register	1	97.0
Medicare Benefits Schedule	6	93.7
Pharmaceutical Benefits Scheme	6	92.3
Australian Early Development Census <sup>a</sup>	4	95.5
NAPLAN <sup>b</sup>	3, 4	95.4
NAPLAN <sup>a</sup>	4	95.5

<sup>a</sup> LSAC birth cohort (born 2004). <sup>b</sup> LSAC kindergarten cohort (born 2000).

Source: Edwards and Siphthorp (sub. 73).

## Federal privacy legislation

Australia's federated system of government provides scope for general privacy protection laws to be enacted at the different levels of government. Most jurisdictions use such general laws to regulate the use and disclosure of personal information. These laws also operate alongside statutes that regulate specific government services (including the provision of higher education) as well as contractual or common law duties. As noted by the Office of the Australian Information Commissioner (OAIC, sub. 69, p. 6):

While the Privacy Act provides an overarching framework for how personal information should be handled, additional legal obligations apply to some types of data and may have implications for information sharing and access. This includes enabling legislation for government agencies which may expressly or impliedly authorise or limit the sharing of information. Data sets may also be subject to confidentiality provisions, contractual obligations or to equitable obligations based in the common law (such as an obligation to maintain confidence).

As a general rule, where there is overlap between general privacy and other legislation the highest privacy standard applies. But the implication of different and often overlapping regulatory provisions is that 'access to data can be restricted even where the applicable regulatory regime does not prevent the sharing of personal information' (OAIC, sub. 69, p. 6).

Moreover, where there are differences in the legislative drafting of laws that provide for the collection of substantially the same or related education data (but delivered through

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either health, taxation, family assistance or other non-education government services), this results in segmented data access, greater uncertainty and a more risk averse approach to data sharing. An example is provided in early childhood collection where some data are collected (and their use regulated) under family assistance law while other data are collected (and their use regulated) under the education law (see below).

## The Privacy Act

Unlike privacy regimes in some other countries, privacy law in Australia does not strictly rely on the notion of individual consent (in all its forms). Rather, Australia's statutory privacy regimes allow for disclosure of personal information in specified circumstances (those typically associated with public interest objectives). As such, privacy law in Australia can be considered less restrictive than in the regimes operating in many other countries (including Europe and the United States).

The main piece of federal legislation is the *Privacy Act 1988* (Cwlth). The Act regulates the handling of personal information by Australian Government agencies, large private organisations (and some small businesses) and all private health service providers (OAIC 2016).<sup>8</sup> The Act covers the collection, storage, security, use, disclosure and destruction of personal information and contains a list of principles, the Australian Privacy Principles (APPs), that set out standards, rights and obligations for the handling of personal information (including sensitive information) that apply to covered entities (box 5.2).<sup>9</sup>

The Act does not apply to state or territory authorities. A key element of the APPs is a requirement that entities to which the law applies (covered entities) must not (subject to certain exceptions) use or disclose information collected from an individual for a purpose other than that for which the information was primarily collected (OAIC 2014, p. 4).<sup>10</sup>

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<sup>8</sup> This coverage has direct relevance to education providers as non-government childcare centres are treated as providers of health services and hold health information (even if providing a health service is not their primary activity) and are therefore subject to the federal privacy law. And in a context relevant to education research, universities created under federal statutes are also covered by the federal Privacy Act. In addition, private schools (Catholic system and Independent) are subject to the federal privacy law while state public schools and state universities are subject to jurisdictional privacy laws.

<sup>9</sup> Those with a turnover greater than \$3 million.

<sup>10</sup> The Act applies to personal information that has been collected or held by a covered entity. Hence, the onus of responsibility to ensure the appropriate management of personal information lies with the entity rather than the body that the information may be used by or disclosed to.

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### Box 5.2      **Australian Privacy Principles (APPs)**

The APPs replaced the National Privacy Principles and Information Privacy Principles on 12 March 2014. The 13 APPs from Schedule 1 of the *Privacy Amendment (Enhancing Privacy Protection) Act 2012* (Cwlth), which amends the *Privacy Act 1988* (Cwlth) are listed below.

1. Open and transparent management of personal information
2. Anonymity and pseudonymity
3. Collection of personal solicited information
4. Dealing with unsolicited personal information
5. Notification of the collection of personal information
6. Use or disclosure of personal information
7. Direct marketing
8. Cross-border disclosure of personal information
9. Adoption, use or disclosure of government related identifiers
10. Quality of personal information
11. Security of personal information
12. Access to personal information
13. Correction of personal information.

Source: OAIC (2014).

### Privacy Act exceptions for health research

The Act provides exceptions to the general privacy provisions for permitted health situations (including the conduct of medical research). Subject to the development and application of detailed guidelines dealing with privacy matters, health research proposals seeking to use identifiable personal or health information *without consent* may be approved on the basis that the public interest in the research substantially outweighs the public interest in maintaining privacy (s. 95 guidelines). In the case of medical research, guidelines described in the *National Statement on Ethical Conduct in Human Research 2007* (the National Statement) and approved by the Australian Information Commissioner set out the conditions under which a data custodian may release personal information to a researcher. These conditions include that the research has been approved by a Human Research Ethics Committee (HREC) (box 5.3).

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### Box 5.3 Human Research Ethics Committees

Human Research Ethics Committees (HRECs) play a central role in the Australian system of ethical oversight of research involving humans. HRECs review research proposals involving human participants to ensure that they are ethically acceptable and in accordance with relevant standards and guidelines. There are more than 200 HRECs in institutions and organisations including universities, hospitals, government health and other departments, research institutes, and welfare services across Australia. Many other countries have similar systems.

In undertaking this role, HRECs are guided by relevant standards including those in the *National Statement on Ethical Conduct in Human Research 2007* (the National Statement) issued by the National Health and Medical Research Council. The National Statement sets out the requirements for the composition of a HREC and the relevant ethical principles and values by which research should be designed and conducted and to which HRECs should refer when reviewing research proposals. It also identifies requirements and responsibilities for:

- institutions/organisations in establishing HRECs
- researchers in submitting research proposals to HRECs
- HRECs in considering and reaching decisions regarding these proposals and in monitoring the conduct of approved research.

In undertaking ethical assessment reviews of research proposals, HRECs consider the protection of privacy of those participating in research or data used in research. HRECs must first consider which legislation might apply to research proposals, that is Commonwealth or state/territory legislation, bearing in mind that in some cases more than one Act will apply.

Individual consent must either be obtained or waived (by the HREC), or an opt-out approach implemented, before a research proposal can be approved. According to the National Statement, the opt-out approach is unlikely to constitute consent where information is deemed sensitive. Hence, where it is impracticable to obtain an individual's explicit consent and the purpose of the research cannot be served by using de-identified data, HRECs then consider whether a research proposal conforms to the relevant privacy principles. Where necessary, guidelines under s. 95 of the *Privacy Act 1988* (Cwlth) that relate to medical research, or those under s. 95A of the same Act that relate to health information, or any other relevant guidelines, are applied.

Conditions for determining whether consent can be waived under s. 95 or s. 95A guidelines by the HREC reflect the nature of medical research and are comprehensive. They include that:

- the research involves low risk of harm to participants
- the benefits from the research justify the risks of harm
- it is impracticable to obtain consent (for example, due to the quantity or age of records)
- there is no known or likely reason that a participant would not consent if asked
- there is sufficient protection of privacy
- there is an adequate plan to protect data confidentiality
- there is an adequate plan to make results available to participants
- the possibility of commercial exploitation of the data would not deprive participants of financial benefits, and the waiver is not prohibited by state, federal or international law (NHMRC, ARC and AVCC 2015, p. 21).

Sources: NHMRC (2016); NHMRC, ARC and AVCC (2015).



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Ethical approval is an important part of medical research practice and culture and this is reflected in the detailed and strict guidance provided in the National Statement. The Commission also understands that in practice the guidelines are not routinely used to waive consent for the release of personal health information. Rather, approval to use personal information is granted on a project-specific basis and medical researchers are often required by HRECs to obtain informed consent from individuals in circumstances where such action is practical (even if not cost-effective).<sup>11</sup>

Researchers have a powerful incentive to comply because ethical approval is required for both National Health and Medical Research Council (NHMRC) research funding support and the publication of research results in medical journals. These features of the health research system give HRECs considerable authority.

Any consideration of extending the current exception in the Privacy Act to other forms of public interest research (including education research) needs to be cognisant of how that exception works in practice in the health area. In particular, this would inform whether the current arrangements in health research need to be refined for use in an extended exception.

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*INFORMATION REQUEST 5.1*

*The Commission invites participants to comment on the operation of the section 95 guidelines in health research and lessons for other forms of research including education.*

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## Alternative avenues to access personal information

In addition to specific health-related exceptions, the Act (under APP 6) also allows personal information to be used or disclosed for a secondary purpose where any of the following exceptions apply:

- an individual has consented to the use or disclosure
- an individual would reasonably expect the use or disclosure
- use or disclosure is required or authorised by law
- permitted general situations exist (such as preventing threats to life, health or safety)
- a permitted health situation exists.

This suite of allowable secondary purpose tests affords data custodians considerable scope to use or disclose personal information (without the need for data to be de-identified). In particular, the reasonable expectations test covers secondary purpose use and disclosure

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<sup>11</sup> Importantly, the project-by-project nature of approval processes means that even where a waiver has been granted, personal information cannot be accessed by other research proposals irrespective of similarities in the research being undertaken.

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(for data compilation or research) for both sensitive or non-sensitive information. The Act describes the test as an objective one that has regard to what a reasonable person, *who is properly informed* (emphasis added), would expect in the circumstances. This is a question of fact in each individual case and the APP entity has an onus of responsibility to justify its conduct (APP 6 — Use or disclosure of personal information).

The reasonable expectations test is supported and expanded by other privacy principles including APP 5 which provides that reasonable steps must be taken to notify or raise awareness of an individual about the purposes of collecting personal information and usual disclosure practices. The OAIC (sub. 69, p. 9) noted that:

A privacy notice that sets out a range of likely secondary uses or disclosures may assist an APP entity in establishing an individual's consent, or reasonable expectation of, those uses or disclosures.

A practical application of the notification provision is in the Australian Early Development Census (AEDC). In co-managing the collection, the Australian Government Department of Education and Training (DET) provides notification to parents (through a privacy statement) about how the personal information provided about their children will be used. Along with a range of de-identified disclosure purposes, parents are notified that personal information contained in the AEDC data may be disclosed for data linkage and research purposes (AEDC 2015).<sup>12</sup>

The Smith Family applauded the granular nature of the AEDC data collection for enabling targeted education interventions:

The availability of [AEDC] data at multiple levels, including the community level, and over multiple years, means that the data can be used to target the particular needs of children in a local area. (sub. 60, p. 12)

This example highlights the value of incorporating tailored notification features in either the original (or refreshed) design parameters of administrative, survey, census and other data collections. Without this feature, cumbersome, expensive and inefficient consent procedures may need to be pursued. This is the present reality facing researchers who wish to access education data from a range of sources (see below).

#### DRAFT RECOMMENDATION 5.1

Agencies responsible for education data collections should amend their processes for collecting personal information from parents/guardians to incorporate formal consent and notification procedures regarding the use and disclosure of personal information at the initial point of collection.

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<sup>12</sup> Parents are given the opportunity to opt-out of the AEDC should they choose.

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But notification options are not always available, particularly where legislation explicitly prohibits the disclosure of personal information in any circumstance (including where consent is obtained). For example, there are much stricter information use and disclosure requirements for information collected on children with a disability under the Nationally Consistent Collection of Data on School Students with Disability (NCCD). This appears to reflect community and/or cultural sensitivities about protecting personal information for particular student cohorts.

The *Australian Education Regulation 2013* states that collected information must not explicitly identify a student who has a disability; has an Indigenous background; or is participating in distance education. The DET (as the data custodian) has issued a public information notice advising parents that only de-identified data will be used in the preparation of reports, briefing materials and as input to policy development (including funding). The notice specifically precludes the disclosure of personal information to third parties without parental consent. But this also means that linkage keys cannot be constructed for that data (except by the data custodian) and accordingly, NCCD (and other) data cannot be used to target policy interventions to individual students who are in the greatest need of such assistance.

Despite the strict NCCD data safeguards (ensuring only de-identified data can be disclosed), some participants were still critical of the ‘passive consent’ approach to privacy adopted under the NCCD and called for more information to be provided to parents. Children and Young People with Disability Australia (CYDA, sub. 66, p. 13) said:

The ‘opt out’ model of consent has been used during the NCCD process. CYDA has been informed that many families of students with disability were not aware of the data collection, nor their child’s involvement. This is despite the fact that the data was collected in 100% of schools in 2015, suggesting that inadequate information has been provided to families. CYDA regards this process as highly problematic.

The concerns of CYDA could be addressed by adopting the recommendation by DET (sub. 68, p. 11) for parental consent mechanisms to be introduced at the point of enrolment as part of a multi-level strategy to deal with privacy barriers:

This issue needs to be addressed on a number of levels, including enrolment procedures and processes that accommodate parental agreement to share information, privacy disclosures and privacy legislation at the state and Commonwealth level.

The Queensland University of Technology Faculty of Education (sub. 19, pp. 13–14) commented on the most appropriate mechanism to gain parental agreement emphasising that ‘opt-out’ approaches were superior (in terms of statistical robustness) to the alternative:

We propose that if the research is in the national interest for improving educational outcomes, and students are required only to engage in activities that would be considered everyday practice within schools (e.g., pen and pencil survey, interaction with teaching staff or learning materials), then opt-out consent is highly appropriate, low-risk and beneficial. The opt-out option would reduce the potential for bias many-fold whereas any opt-in process potentially establishes bias from the outset.

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More broadly, the DET proposal highlights the piecemeal applicability of existing avenues to allow data disclosure under the federal privacy law. These avenues are either not well understood or cannot be universally applied. And as noted by DET (and discussed below), other legislative arrangements place stricter limits on disclosure than general privacy laws. Several submissions to this inquiry indicated that the general relief granted by the federal privacy law is confusing and hence is not being embraced by data custodians and ethics committees. The Tasmanian Government (sub. 75, p. 5) suggested that the problem lay in the wording of the relevant privacy Acts.

Tasmania would support ‘plain English’ interpretations of privacy legislation to assist decision makers.

The OAIC (sub. 69, p. 1) (charged with administering the federal privacy law) provided a broader insight into the underlying drivers:

Privacy, however, is often named as the primary barrier to sharing or accessing personal information from and across government agencies – that is not correct. Privacy rather than preventing the sharing of personal information places important limitations around the circumstances under which it can be collected, used and disclosed. Instead, and as identified in the Issues Paper, impediments to appropriate information sharing often include a general reluctance to disclose personal information due to misunderstandings of privacy law, secrecy issues and a risk averse culture within agencies.

### Extending the reach of the s. 95 exception to public interest research

This confusion raises a valid question about whether the s. 95 exception (and the associated conditions requiring public interest consideration of relevant privacy protection guidelines by the Information Commissioner) for health-related disclosure should be broadened. It could cover other activities that are conducted in the public interest and thereby remove any ambiguity about public interest exceptions (and potentially the need for notification requirements). The rationale for restricting use or disclosure exceptions to health related research is not clear. Submissions to this inquiry even noted that privacy risks in education research are lower than those in health. Speech Pathology Australia (sub. 35, p. 15) said:

There are risks associated with the linkage of data at individual (and cohort) level of data – particularly if proposals are to link educational data with health, employment, social services or justice data ... Of course, appropriate privacy safeguards need to be put in place to ensure that linked data is used in an appropriate way. However barriers to privacy concerns have been overcome within the health sector (where arguably, the stakes are considerably higher and there are very strict health privacy legislative requirements).

In a 2008 review of Australia’s privacy laws the Australian Law Reform Commission (ALRC) recommended that s. 95 of the Privacy Act be extended beyond health to include the use of personal information in all forms of human research. Citing wide ranging (but not universal) support from submissions the ALRC (2008, p. 2164) concluded:

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There is no in-principle reason to limit the arrangements for research under the *Privacy Act* to health and medical research. The ALRC notes that the research exceptions in other jurisdictions, such as the United Kingdom, Canada and New Zealand, are expressed in broad terms.

In its response to the ALRC report, the Government accepted the recommendation to extend the existing arrangements for health research to all forms of human research on the grounds that:

Forms of human research beyond those relating to health and medical research can serve important public interests. Provided that appropriate protections are adopted, the Privacy Act should permit the collection, use and disclosure of personal information without consent for the purpose of important human research in certain circumstances.

Appropriate protections should include:

- that the exception may only be relied upon where consent is impracticable;
- the activity is subject to institutional ethical oversight of research proposals; and
- the public interest in a research proposal substantially outweighs the public interest in protecting privacy. (Australian Government 2009, p. 139)

However, the Privacy Act was not subsequently amended to implement the recommended change. The Commission has been unable to determine the basis for this outcome but it notes that the resulting confusion for education data stakeholders (for example, data custodians and ethics committees) may be undermining data sharing across and within jurisdictions. The OAIC (sub. 69, p. 14) supported the revisiting of the ALRC's recommendation:

A review of the framework for research under the Privacy Act would enable other mechanisms to be explored, to facilitate the availability of data for research whilst maintaining adequate protection for personal information.

Extending the reach of s. 95 was explicitly supported by other participants including the Australian Curriculum, Assessment and Reporting Authority (ACARA, sub. 62, p. 5) which said:

ACARA would support exploration of establishing an exception under the Privacy Act relating to education data research that is equivalent to section 95 of the Act for health data, subject to appropriate checks and balances being put into place.

The checks and balances referred to by ACARA would include independent ethical research guidelines approved by the OAIC. The School of Education and Professional Studies at Griffith University (sub. 76, p. 5) suggested that the ethical framework issued by the NHMRC and used for medical research should guide information management in the education space:

Governance should ensure that current national ethics frameworks being applied in other contexts – such as human research ethics – are drawn upon to inform improved governance through well-defined accountability and responsibility, transparency and oversight of the quality and availability of data, access protocols, procedures, and dispute resolution mechanisms.

However, as noted above, the operation of those guidelines does not guarantee access to personal information without obtaining an individual's consent.

#### DRAFT RECOMMENDATION 5.2

The Australian Government should amend the *Privacy Act 1998* (Cwlth) to extend the arrangements relating to the collection, use or disclosure of personal information without consent in the area of health and medical research to cover public interest research more generally.

## State and territory regulation of privacy

In addition to the national privacy law, six of Australia's states and territories have general privacy laws that cover the handling of personal information (table 5.2).

**Table 5.2 Features of jurisdictional privacy regulation**

<i>Jurisdiction</i>	<i>Legislation or administrative instruction</i>	<i>Public interest research exception available</i>	<i>Exception relies on impracticality of obtaining consent</i>	<i>Interstate transfer of personal information allowed</i>
New South Wales	Legislated	Yes	Yes	Yes
Victoria	Legislated	Yes	Yes	Yes
Queensland	Legislated	Yes	Yes	Yes
Western Australia	Neither	No	..	No
South Australia	Administrative	No	..	No
Tasmania	Legislated	Yes	Yes	Yes
Northern Territory	Legislated	Yes	Yes	Yes
ACT	Legislated	No	..	No

.. Not applicable.

*Sources: Privacy and Personal Information Protection Act 1998 (NSW); Privacy and Data Protection Act 2014 (Vic); Information Privacy Act 2009 (Qld); Information Privacy Principles 2013 (SA); Personal Information Protection Act 2004 (Tas); Information Act 2002 (NT); Information Privacy Act 2014 (ACT).*

The exceptions are South Australia which uses administrative powers to regulate privacy and Western Australia which does not have formal privacy regulation but regulates education data through education and related Acts (discussed in section 5.3). State and territory legislation creates information privacy requirements similar to those under the Privacy Act, with application to government schools, state and territory government agencies as well as (variously) local councils, government-owned corporations and universities (created under state statutes).

Jurisdictional privacy laws share common features including guidance-based information principles (similar to the APPs in the federal privacy law) that cover the collection, use,

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storage, access and disclosure (including through trans-border flows) of information and apply to all public sector agencies. While the laws generally prohibit the disclosure of information to third parties, many allow general public interest exemptions (including for research purposes) subject to conditions (discussed below).

Importantly, several jurisdictions specifically allow sharing of data with other jurisdictions provided the recipient is subject to the same privacy principles as the originating jurisdiction. This effectively means mutual recognition of privacy laws in ‘like’ jurisdictions. By extension, jurisdictions that do not have formal privacy laws are (at least technically) impeded from accessing and using personal information collected by other jurisdictions. A recent example involves an attempted partnership project between Western Australia, South Australia and the Northern Territory, which sought to use student level attendance data to track children in remote areas moving between the three jurisdictions (box 5.4).

**Box 5.4      An example of cross-jurisdictional data sharing challenges**

An example of the challenges faced in sharing education data between school systems and jurisdictions with inconsistent privacy legislation is the Trans-Border Attendance Strategy. The Strategy commenced as a pilot in 2009 and included 45 Northern Territory, South Australian and Western Australian remote schools to address the issue of absenteeism and significant mobility amongst Indigenous students. The Strategy gradually progressed to include 399 public, Catholic and Independent schools in 2013.

A key feature of the Strategy was an information technology platform — the Central Schools System — which consolidated and merged attendance data from participating systems. Through the use of the platform, schools were able to share attendance, enrolment and learning information across education sectors (public, Catholic and Independent) and across jurisdictions. As a result of the availability of this information, school staff could determine (on or before student arrival) the student’s past enrolment and attendance history, and access other information necessary to progress individual learning or develop behaviour plans for transient students.

The project initially drew considerable interest from other jurisdictions seeking to be involved. However the project was hampered by issues with uptake and usability of the data platform by schools. These issues were compounded by legislative privacy barriers in some jurisdictions in relation to data sharing. Expansion of the strategy has been halted and ongoing participation of existing jurisdictions remains uncertain. According to the Northern Territory Government (sub. 77, p. 5):

Along with the legislative issues that can arise in sharing data between jurisdictions and school sectors, this project highlights the importance of ensuring data projects of this kind are designed to be valuable and accessible for schools.

Sources: NT Government (sub. 77); WADET (2016).

## Specific exceptions in state and territory privacy legislation

In contrast to federal privacy law, which provides a specific exception to disclosure obligations for health (subject to the conditions described earlier), several jurisdictions allow more liberal access to personal information where it is in the public interest to allow

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such disclosure. In particular, New South Wales, Victoria, Queensland, Tasmania and the Northern Territory provide for the use and disclosure of personal information conditional on it:<sup>13</sup>

- being necessary for research, or the compilation or analysis of statistics that is in the public interest
- not involving the publication of all or any personal information in a form that identifies an individual
- being impractical to obtain the express or implied consent of the individual before disclosure.

Notably, in those jurisdictions where public interest exceptions are available, the conditions for allowing the exception only partly mirror those provided under s. 95 of the federal privacy law. Specifically, Queensland, Victoria and Tasmania delegate authority to the respective Minister, Information and/or Privacy Commissioner to determine whether the public interest in waiving compliance with jurisdictional privacy principles outweighs the public interest in complying with those principles. New South Wales and the Northern Territory, on the other hand, only delegate authority to the respective Information or Privacy Commissioner to issue guidelines or a code of practice dealing with the disclosure of personal information.

The privacy legislation in these jurisdictions also differs from the federal law in that they allow the transfer of personal information to a recipient outside the jurisdiction if that recipient is subject to substantially similar information privacy principles as those operating in the source jurisdiction. The Victorian legislation provides an example:

An organisation may transfer personal information about an individual to someone (other than the organisation or the individual) who is outside Victoria only if ... the organisation reasonably believes that the recipient of the information is subject to a law, binding scheme or contract which effectively upholds principles for fair handling of the information that are substantially similar to the Information Privacy Principles ... (*Privacy and Data Protection Act 2014*, sch. 1)

As mentioned above, this is effectively a form of mutual recognition of jurisdictional privacy laws (in certain jurisdictions) but the Commission is not aware of any examples of inter-jurisdictional data transfers using this provision.

In the context of the Commission's discussion regarding a public interest research exception, it is the Commission's view that the ACT, which currently does not have such a provision, should enact such an exception to their law. In South Australia and Western Australia they should ensure their privacy arrangements reflect a public interest research exception.

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<sup>13</sup> These jurisdictions all use privacy principles which are substantially similar to the federal privacy law.



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#### DRAFT RECOMMENDATION 5.3

The ACT Government should enact in its privacy law an exception to cover public interest research. In Western Australia and South Australia where there is not a legislated privacy regime, their privacy arrangements should reflect a similar public interest research exception.

### Other state and territory treatment of personal information

Privacy regulations in Western Australia, South Australia and the ACT do not permit the use and disclosure of personal information for any research or related purpose. While the legislation in the ACT substantially mirrors the provisions of the federal Privacy Act, it diverges in one important respect in making no provision for exceptions to the collection, use and disclosure provisions of personal information in the case of health (or any other) research.

Although South Australia does not have specific privacy legislation, the SA government has issued an administrative instruction requiring its government agencies to comply with a set of Information Privacy Principles (IPPs) (SADPC 2013). While the South Australian IPPs list allowable exceptions to the use and disclosure of personal information for purposes other than the primary purpose of collection, those exceptions do not extend to any form of research, analysis or compilation of statistics.

Western Australia stands out from the other jurisdictions in that it does not specifically regulate privacy either through legislation or administrative instruction. Various confidentiality provisions cover government agencies, and some privacy principles are provided for in the *Freedom of Information Act 1992* (WA).<sup>14</sup> The Telethon Kids Institute (sub. 15, p. 15) recommended the introduction of specific privacy legislation in Western Australia that was compatible with other jurisdictions so as to enable data sharing:

There is no privacy legislation applicable to WA State government agencies. The use and disclosure of confidential information is restricted by statutory duties of confidentiality and the common law duty of confidentiality. There is a need for enabling legislation, such as Data Linkage Act/Privacy Act, balanced between privacy rights and data sharing, to support data custodians and enable research for the public good. Any legislation should also ensure compatibility with Commonwealth principles [APPs] so WA can interface with data from the Commonwealth and other States.

However, separate education-related legislation in Western Australia specifically restricts the sharing of data. The Western Australian *School Education Act 1999* limits the disclosure and use of personal information except in prescribed circumstances. Available exceptions do not include research and/or the compilation of statistics although the relevant

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<sup>14</sup> These include a common law duty to protect confidentiality.

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Minister has the power to authorise such disclosure and use (*School Education Act 1999* (WA), s. 242(7)). The Commission understands that the Minister has delegated such authority to the Director General of Education.

In addition, the *WA School Curriculum and Standards Authority Act 1997* restricts the release of student education data to students and their parents. The submission by the WA School Curriculum and Standards Authority (sub. 14, p. 11) noted that:

Currently, the *School Curriculum and Standards Authority Act, 1997* imposes restrictions on how student data collected by the authority can be used. The Authority is in the process of amending the Act through legislative processes to allow it to have more flexibility in the way it can share data.

The preceding discussion highlights a lack of uniformity in privacy regulation across jurisdictions and some of the practical implications of these differences. Greater uniformity of privacy laws would go some way towards reducing the regulatory complexity that contributes to risk averse behaviour by approval authorities, and would facilitate access to data through regulatory cooperative approaches, such as mutual recognition.

## 5.2 Other legislative restrictions

### General legislation

Other federal legislation also deals with the handling of personal information including the *Freedom of Information Act 1982* (Cwlth) which provides a right of access to documents held by government agencies except in circumstances where such access would involve unreasonable disclosure of personal information. The *Archives Act 1983* (Cwlth) provides a similar exemption (ALRC 2014). Federal legislation also contains a large number of secrecy provisions that impose duties on public employees not to disclose information that comes to them by virtue of their office. As mentioned above, the higher standard applies in situations where there is overlap between different pieces of legislation.

### Specific legislation

Provisions contained in various other legislation at the federal level require or authorise certain activities including the collection, use and disclosure of personal information. In an education relevant context, the *Census and Statistics Act 1905* (Cwlth) authorises collection by the ABS of large volumes of personal information but prohibits the ABS from the publication or dissemination of statistical information which would enable identification of particular individuals:

- (1) The Statistician shall compile and analyse the statistical information collected under this Act and shall publish and disseminate the results of any such compilation and analysis, or abstracts of those results.

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(2) The results or abstracts referred to in subsection (1) shall not be published or *disseminated* [emphasis added] in a manner that is likely to enable the identification of a particular person or organization.

(3) The Statistician may make charges for results and abstracts published and disseminated under this section. (*Census and Statistics Act 1905* (Cwlth), s. 12)

Importantly, the Act applies to any datasets brought into the ABS or integrated (linked) by the ABS. This means that personal information contained in data collections from jurisdictions that allow the disclosure of that information cannot be used by researchers in an ABS linked dataset. Also, linkage of data from the Census of Population and Housing with other datasets can only occur using de-identified data (chapter 6).<sup>15,16</sup> ACARA (sub. 62, p. 5) commented on the restrictions imposed on the ABS by its legislation in the context of developing an enduring dataset:

The proposed Australian Longitudinal Learning Database offers some benefits, but given limitations on access to data once held by the Australian Bureau of Statistics (ABS), this is not an ideal option.

Similarly, the Department of Social Services which is the data custodian for the Longitudinal Study of Australian Children and the Longitudinal Study of Indigenous Children is prevented from disclosing personal information. And the *Australian Institute of Health and Welfare Act 1987* (s. 29) prohibits the Australian Institute of Health and Welfare from making a record, divulging or communicating information about any person other than in accordance with the Act. Also, other Acts require or authorise the disclosure of personal information in a range of prescribed circumstances.<sup>17</sup>

In a different context, the legal framework that underpins childcare fee assistance protects childcare administrative data (and other data collected under the legislation) from being used or disclosed for the purposes other than outlined in the relevant Act (DET, sub. 68, p. 9). In particular, section 162 of *A New Tax System (Family Assistance) (Administration) Act 1999* (Cwlth) protects personal information collected as part of the administration of the Act, except in a range of prescribed circumstances (which include obtaining express or implied consent of the individual to whom the information relates).<sup>18</sup>

As these administrative data are used by the ABS to construct the National Early Childhood Education and Care Collection (NECECC), the stricter privacy provisions of the

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<sup>15</sup> Names and addresses collected during the Census have traditionally been deleted once the Census data has been collated. However, the ABS is seeking to hold such information for a period of four years for the 2016 Census and all subsequent Census collections.

<sup>16</sup> Unit record data held for the ABS's National Schools Statistics Collection and the National Early Childhood Education and Care Collection would also be limited to the use of de-identified information.

<sup>17</sup> Examples include the *Telecommunications Act 1997* (Cwlth), the *Income Tax Assessment Act 1936* (Cwlth) and the *Corporations Act 2001* (Cwlth).

<sup>18</sup> The Act also gives the relevant Minister the power (under s. 162(3)) to specify additional purposes for which protected information may be obtained, recorded, disclosed or otherwise used.

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Census and Statistics Act (mentioned above) apply to the NECECC. According to the DET (sub. 68, p. 9):

While it is right to protect the access and integrity of all data, this legislation places significant restriction around how NECECC data can be used by both the Australian Government itself, and its state and territory counterparts, thereby limiting its usefulness in contributing to the early childhood education evidence base.

However, although the legislative provisions of the Family Assistance Administration Act and the Census and Statistics Act limit the dissemination of identified childcare data, the Family Assistance Administration Act (s. 162(2A)) does allow for the disclosure of protected information in an aggregated form:

A person may use protected information to produce information in an aggregated form that does not disclose, either directly or indirectly, information about a particular person.

There is a dichotomy between the use and disclosure of identified as opposed to de-identified information, and there is uncertainty created by the range of legislation dealing with the protection of personal information. These factors highlight the need for greater consistency within and across legal instruments and also the need for careful legislative drafting to avoid the intent of the legislation and of general privacy laws being weakened.

As an example of the inconsistencies *within* legislative instruments, the *Australian Education Act 2013* (Cwlth) allows the use and disclosure of personal information collected from government and non-government schools (including for preschool delivered in a school setting) for a range of purposes including education relevant research and statistical analysis. The Regulations supporting the Act state in part:

(1) For paragraph 125(1)(a) of the Act, the Minister may make a record of, use or disclose protected information for the following purposes:

- (a) the purposes of the Act or this regulation;
- (b) programs administered by the Minister;
- (c) research into matters of relevance to the Department;
- (d) statistical analysis of matters of relevance to the Department;
- (e) policy development;
- (f) any other purpose determined by the Minister under subsection (3). (Australian Education Regulation 2013, r. 65)

However, as mentioned above, with respect to the collection of data on students with characteristics that are consistent with disadvantage (such as students from Indigenous backgrounds, students with a disability or those engaged in distance education), the same Education Regulations (2013, ss. 48, 50) state that the information collected must not explicitly identify any student. This results in fragmented access to components of the same dataset, which may also increase the costs associated with disclosure.

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In terms of inconsistent treatment *across* legal instruments, the legislation that enables the collection of personal information from childcare services delivered outside formal school settings prohibits the release of protected (personal) information except in certain prescribed circumstances. Although there is general relief from the law which appears to allow sharing of de-identified data (as shown in the following excerpt), this interpretation has not been universally accepted (see above).

A person may use protected information to produce information in an aggregated form that does not disclose, either directly or indirectly, information about a particular person. (*A New Tax System (Family Assistance) (Administration) Act 1999* (Cwlth), s. 162(2A))

### Greater legislative consistency is needed

Cross-jurisdictional data sharing activities present particular challenges for privacy regulations as personal information is subject to more than one regulatory regime. According to the OAIC (sub. 69, p. 6):

Regulatory overlap potentially can restrict access to data even where the applicable regulatory schemes do not prevent the sharing of personal information, as some agencies and organisations may adopt a more risk averse approach when sharing information across jurisdictions.

This suggests that greater legislative consistency is needed to enable the sharing of education data across jurisdictions and to deliver a national education evidence base. In recommending a suite of necessary changes to address privacy barriers, DET (sub. 68, p. 11) said that in regard to legislative restrictions beyond specific privacy laws:

It is also necessary to consider other legislative arrangements (for example, family assistance law and the *Australian Education Act 2013*) that govern protected information on children and students and look to improving how these can promote sharing of education data in a confidentialised framework that accords with privacy principles within the education sector and for education researchers.

As noted earlier, some jurisdictions are already headed in this direction. The School Curriculum and Standards Authority of Western Australia, for example, said that it was in the process of amending its own enabling legislation to allow greater sharing of data. And it suggested similar action was needed in other jurisdictions:

... the Acts governing agencies that collect and manage education data in Western Australia may need to be changed to allow data sharing. Without such changes, some agencies may be unable to participate in dataset sharing activities and hence will affect data linkage activities over a range of data associated with education outcomes. State privacy Acts and government standards will also impact on data sharing and national and individual state and territory privacy legislation will need to be carefully considered. (SCSA WA, sub. 14, p. 10)

The Population Health Research Network went further in calling for a staged solution culminating in a uniform national approach:

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There are a number of approaches that could overcome the barriers that the legal framework causes. In the short term the provision of guidance materials and training to assist data custodian agencies to process requests for access to data would be worthwhile. In the medium term changes to legislation to clarify use of specific data collections for research may be required. In particular, each jurisdiction (state, territory and Commonwealth) should have legislation that covers the collection, use and disclosure of education information. In the longer term, Australia should consider a more uniform national approach. (sub. 24, p. 3)

The suggestion from the Population Health Research Network that each jurisdiction should have legislation clarifying the use of specific data collections has been given effect in one jurisdiction. New South Wales has introduced laws to remove barriers that impede the sharing of government sector data between government agencies through the *Data Sharing (Government Sector) Act 2015*. This Act was also introduced to support the establishment of the NSW Data Analytics Centre (DAC), which is charged with delivering whole of government data analysis to inform evidence-based decision making and service delivery.

Importantly, that legislation *authorises* government sector agencies to share data voluntarily as well as gives the Minister power to direct agencies to share data. A critical element of the legislation is that it overrides other legislation that would otherwise act to restrict the sharing of data. The Act states:

Subject to subsection (2) [which quarantines personal information], a disclosure of government sector data by a government sector agency to the DAC or to another government sector agency is lawful for the purposes of any other Act or law that would otherwise operate to prohibit that disclosure (whether or not the prohibition is subject to specified qualifications or exceptions) if:

- (a) this Act provides that the agency is authorised to share the data with the DAC or other government sector agency, and
- (b) the agency provides the data to the data recipient only for the purpose to which the authorisation to share relates. (*Data Sharing (Government Sector) Act 2015* (NSW), s. 5)

As structured, the NSW legislation serves to modify or bypass the incentives facing data custodians operating within that jurisdiction. The centralisation of the data analysis task also avoids the need to seek approval from multiple ethics committees (section 5.3). But the Data Sharing Act only covers transfers of data between government sector agencies in New South Wales. The Act does not facilitate access to data by non-government researchers or enable the data sharing with government agencies in other jurisdictions.

A Bill, which would similarly facilitate the sharing of data between public sector agencies for the purpose of assessing the efficacy of government policies, program management or service planning and delivery by public sector agencies, has also recently been introduced into the SA parliament. The Public Sector (Data Sharing) Bill 2016 largely mirrors the legislation in New South Wales in authorising public sector agencies to share data, and in empowering the relevant Minister (or their delegate) to direct a public sector agency to provide public sector data. The SA legislation also specifically references the ‘5 Safes’ trusted access principles to minimise the risk that shared data will be misused (chapter 6). The Bill does not provide scope to share data with other jurisdictions.

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The Commission recognises that a nationally consistent legislative approach will take some time to develop as it involves negotiation with, and the cooperation of, all state and territory governments. In the interim, an option to make the best use of data at the Australian, state and territory government levels could be to follow the recommendations contained in a submission by SA NT DataLink to the recent Senate Select Committee on Health Inquiry into Health Policy, Administration and Expenditure (SA NT DataLink 2015). It suggested that legislation and policy guidance be developed to allow access to data from Australian Government agencies:

While a nationally consistent legislative approach would be desirable ... it is recognised that this would be a longer term objective requiring the cooperation of all State and Territory governments.

In the interim, the legislation and policy principles that govern the provision of Commonwealth held data for linkage with State, Territories and non-government data should be considered a priority in order to make the best use of the data at State and Territory and Australian government levels. In particular, how legislation and/or policy directions may apply to agencies such as the Department of Health, the Department of Human Services and the ABS. (SA NT DataLink 2015, p. 9)

#### DRAFT RECOMMENDATION 5.4

The Australian, state and territory governments should pursue legislative consistency in education and related Acts regulating the use and disclosure of education information, and amend legislation so that it is aligned with the intent of general privacy laws.

### 5.3 Multiple approval processes

In the education sphere, administrative and other data are fragmented and sector-specific with data collected from (and held by) a variety of sources. Often there are multiple custodians involved in collecting and managing components of the same data set. In total there are more than 30 separate education data custodians each requiring approval before data can be accessed (chapter 6). Research proposals also require approval from research ethics committees before applications to data custodians will be considered. Attempts at linking education data with data from other domains expands the requisite approvals even further.

Delays involved in seeking approval from data custodians and research ethics committees were a major concern in submissions and in discussions with stakeholders. The Commission was told that many research projects simply do not proceed because of the delays experienced in gaining approval across jurisdictions and between school systems. The Telethon Kids Institute (sub. 15, p. 14) commented that the data application process was extensive and that there were multiple unnecessary pathways required for approval. It

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separately identified ethics committee and data custodian approval processes as the two major bottle necks to access and use of education data.

The need to obtain ethics and access approval from each state/territory department of education, Catholic Education in each jurisdiction (and individual catholic schools in some jurisdictions) and independent schools is time consuming. The ethics requirements of each jurisdiction's various education bureaucracies are different meaning that each application can require up to 24 versions to satisfy each sector and jurisdiction.

Obtaining data custodian approval is also problematic. There may be a lack of trust between department staff and researchers about how the data will be used. Education bureaucracies are risk averse to the release of data. In some instances, parental agreement to participate and release the necessary data has been overturned by the bureaucracies. WA has a formal Intellectual Property Agreement that requires all researchers making use of its linked data to provide custodians with copies of all reports prior to their release. Custodians have two weeks to review the reports. (Telethon Kids Institute, sub. 15, p. 10)

The Fraser Mustard Centre (sub. 52, p. 3) (a collaboration between the South Australian Department of Education and Training and the Telethon Kids Institute) provided a specific example to highlight the complexity and protracted nature of current approval processes.

The Fraser Mustard Centre has also been involved in a national data linkage project initiated in 2013 aiming to link the perinatal data of children born in 2006-2007 to their 2009 AEDC data and year 3 NAPLAN [National Assessment Plan — Literacy and Numeracy] results across all states and territories in Australia utilising the NCRIS [National Collaborative Research Infrastructure Strategy] funded data linkage infrastructure. To date this has required 18 ethics applications and approvals from over 25 custodians of data, and despite positive support from all education based custodians involved, we are yet to receive linked data from any state or territory. By the time any linked data is received, the data will have been superseded by both the 2012 and 2015 AEDC cohorts of children.

Elsewhere, the Faculty of Education at The University of Western Australia (sub. 10, p. 2) focused on the logistical challenges of dealing with multiple data custodians:

At present, most identified data sets are held at either the jurisdiction and service level or the school level and it is cumbersome if not impossible to coordinate linkage projects across the many data custodians involved.

## **Options to reduce approval delays**

Potential improvements to approval processes have been suggested both in submissions and elsewhere, including the adoption of nationally consistent data release standards for data custodians and the centralisation of approval decisions including those by ethics committees (box 5.5).



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### Box 5.5      **Participants' views on options to address approval delays**

The Telethon Kids Institute (sub. 15, p. 14) said the consequences of multiple approval bodies could be addressed by moving towards centralised approval processes:

Moving forward, it is important for approval processes to be streamlined and based on a centralised approval process, and for data custodians to provide approval at just one stage of the application process. There may be scope for single cross-agency ethics approvals in the future under a whole-of-government model.

Researchers on a recent project attempting to link National Assessment Program — Literacy and Numeracy (NAPLAN) and Longitudinal Survey of Australian Youth data suggested that project approval should be coordinated at a national rather than jurisdictional level:

Coordinating the differing requirements of each jurisdiction proved to be one of the most challenging aspects of the project. To help remedy this, project approvals could be obtained through existing national governance processes established to support the work of the Education Council, rather than separately for each state and territory, with the Commonwealth playing a key role in coordinating changes to the current agreements and existing protocols to support this. (Lumsden et al. 2015)

The Fraser Mustard Centre (sub. 52, p. 2) argued for the standardisation of data release and sharing practices in part because of biases in the current system that lead to data being shared more freely with some institutions rather than others.

Whilst there are currently rules and frameworks in place to support data release and sharing, too often these provide few incentives to individual decision makers to decide in favour of releasing data or to direct the resources required to deliver data quickly.

When political will at a senior executive level is favourable a cultural shift can occur that enables data to be shared, however; data release and sharing practices should be standardised and guided by nationally accepted standards to ensure equity in access for institutions.

Consistent data release standards would involve the introduction of policy guidelines at the federal and jurisdictional level which place an onus on departments to release data unless an exception can be justified (Fraser Mustard Centre, sub. 52, p. 3). This would provide data custodians with a mandate to release data and hence mitigate the risk aversion evident in the current system. It would also allay concerns that some custodians favour certain researchers and research institutions over others (Fraser Mustard Centre, sub. 52, p. 2). Guidelines would also establish a framework for reasonable timeframes for data release depending on the use of the data and the associated public benefits. Accordingly, this approach would likely streamline and hasten the granting of approvals by education data custodians.

Another option would involve shifting responsibility for approving access to education data away from individual custodians to a centralised authority at arms-length from the data custodian. This would address the risk aversion facing custodians directly and make the process of accessing education data more streamlined, transparent and efficient. A move to centralised oversight of approvals *within each jurisdiction* would be more tractable than national oversight because of jurisdictional concerns about data being used for unintended purposes (such as allocating education funding or benchmarking jurisdictional education policies). Indeed, the recent legislative change in New South Wales authorising the relevant Minister to direct the sharing of data by custodians provides an example of what is

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effectively centralised jurisdictional approval (even though the data can only be used by the DAC and other NSW government agencies). However, there would still be significant hurdles for researchers wishing to share and link datasets from more than one jurisdiction. That problem could be overcome through a national governance process.

**DRAFT RECOMMENDATION 5.5**

The Australian, state and territory governments should introduce policy guidelines which place the onus on data custodians to share data unless a privacy (or other) exception can be justified.

## Mutual recognition

An alternative approach could involve the use of national guidelines for a system of mutual recognition of approval decisions by data custodians and ethics committees. As noted above, jurisdictional privacy legislation provides scope for mutual recognition of approvals by allowing the transfer of personal information between jurisdictions with substantially the same privacy principles. While the Commission is not aware of any examples of such transfers this may reflect the range of countervailing influences on approval bodies (not least of which is the absence of a mandate to release data).

Importantly, mutual recognition is a feature of the ethical approval process in health research. The National Statement on Ethical Conduct in Human Research contains specific provisions aimed at minimising duplication of ethical review in a range of research settings:

Wherever more than one institution has a responsibility to ensure that a human research project is subject to ethical review (see paragraph 5.1.1), each institution has the further responsibility to adopt a review process that eliminates any unnecessary duplication of ethical review. (NHMRC 2015, p. 78)

An agreement operating in several states also provides a mechanism for single ethical and scientific review of multi-site research projects. Under the agreement known as National Mutual Acceptance (NMA) multi-site human research projects are reviewed for ethical and scientific merit once only by an NHMRC certified HREC from a participating jurisdiction. New South Wales, Queensland, Victoria and South Australia are current participants in the NMA. Originally restricted to clinical trials, the scope of the NMA was expanded to include all forms of human research in December 2015.<sup>19</sup>

Support for applying the approach in health to address the ‘time consuming and costly endeavour’ of dealing with multiple jurisdictional education data holdings came from the submission by the National Centre for Vocational Educational Research (sub. 65, p. 4):

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<sup>19</sup> The NMA was given effect through the signing of a Memorandum of Understanding.

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Consider a process for single review and approval for work involving multiple data custodians. This may be similar to the National Health and Medical Research Council's Human Research Ethics approvals for multi-site work, as discussed in chapter 5.3 of the National Statement on Ethical Conduct in Human Research ...

However, the Commission understands that the mutual recognition principle is not universally applied in the health area despite the guidelines in the National Statement. In a recent Senate Select Committee on Health Inquiry into Health Policy, Administration and Expenditure, several examples were provided of multiple jurisdictional approval requirements that created lengthy delays in securing health research approval (SSCH 2016a). The Committee noted in particular that Australian government departments were currently not recognising ethics approvals obtained in the states. It went on to recommend that:

... the [Australian] government take a whole-of-government approach to streamlining the ethics approval process and the authorising environment in consultation with the Privacy Commissioner, privacy advocates, the NHMRC, data custodians, academics, consumers and the States and Territories. The government should also work with the States and Territories to establish a national accreditation system so that ethics approvals from accredited jurisdictions are recognised by the Commonwealth. (SSCH 2016a, p. xx)

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#### INFORMATION REQUEST 5.2

*The Commission invites participants to comment on the operation of mutual recognition in the health area and any lessons it provides for education research.*

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In summary, the Commission sees considerable benefit from allowing greater access to and use of existing education data. Improved access would serve to facilitate better analysis and assessment of education system performance and through this inform decision making and improve service delivery. The Commission has recommended a suite of changes that it considers would enhance the ability to deliver these benefits. In certain cases, these recommendations support those made by other review bodies or broaden the application of existing jurisdictional reform initiatives.



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## 6 Data linkage

### Key points

- A data linkage capacity leverages the value that can be drawn from existing education (and other) data. For example it:
  - allows a more comprehensive understanding of the factors that contribute to an individual's life-course outcomes
  - provides scope for targeting interventions by teachers and schools to address specific student characteristics, such as disability and indigeneity.
- Linkage is most effectively conducted using personal information that identifies individuals. Identified data reduces errors in linkage processes, allows for targeted research and policy interventions at the individual or school level.
- Where identified data is unavailable (due to legislative or other constraints) linkage relies on the use of statistical linkage keys to match records in different datasets.
- Impediments limiting the scope to link education and other data assets include privacy and other legislative barriers (discussed in the previous chapter), risk aversion by education data custodians, the project-specific nature of data linkage arrangements, the cost of linkage infrastructure and the comparability of data across education and other datasets.
- Education data custodians are reluctant to allow their data to be linked despite the availability of sophisticated data security arrangements which significantly lower the risk of sensitive (personal) information being compromised.
- There has been significant recent investment in national linkage infrastructure. But current national linkage arrangements do not readily allow linked data resources to be retained on an ongoing basis. This is inefficient and leads to duplication in the process of constructing linked datasets.

Data linkage offers significant opportunities to use and harness the value of existing education, employment, health and other social data assets, but there are impediments which limit the scope to link datasets. These impediments include legislative barriers, inconsistent data standards and inefficient ethics approval processes. Earlier chapters have canvassed options to address these impediments in the context of bridging gaps in education data and evidence. This chapter focusses on impediments to effective data linkage.

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## 6.1 The power of data linkage

Data linkage refers to the process of matching records on the same individual contained in different data sources (from administrative, survey or other data collections) so that the sources are combined to present more comprehensive information about those individuals (Gemici and Nguyen 2013). Linkage can take place across datasets in a single domain (education) or across domains (early childhood development, education, employment, health, disability, income and housing). It is a valuable tool for population research as it provides a broader picture of the population, can be more cost-effective relative to other data collection mechanisms (surveys), enables studies to be done that could not otherwise be performed and reduces respondent burden. But linkage relies on access to shared datasets (chapter 5).

The Commission has previously highlighted the significant potential benefits of matching administrative and other datasets (PC 2013a). It noted that, used for policy analysis, data matching can enhance and better target effective programs; identify ineffective programs across a range of government services; allow independent verification of official evaluations and provide insights to government at low cost. By linking data across domains, it is also possible to analyse the pathways for individuals with characteristics that make them vulnerable to disadvantage. Options to intervene can then be explored.

Moreover, the magnitude of current and projected expenditures on education means data matching presents an enormous potential opportunity for Australia. The Commission notes that Australia (despite specific achievements in health linkage) is well behind other countries in allowing access to administrative data for research and other purposes. New Zealand, Canada, Denmark, Sweden, Finland and the Netherlands all allow access to administrative datasets for research purposes. While most of these countries do not share the challenges presented by Australia's federated system of government, countries such as Canada are proof that jurisdictional differences are not an insurmountable barrier to data linkage.

Support for data linkage and the potential this process offers for policy development was widespread among participants (see box 6.1).

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## Box 6.1      **Participants' views on data linkage**

The Australian Government Department of Education and Training (sub. 68, p. 2) referred to the importance of linkage for social policy development.

Achieving a more integrated and cost-effective national education evidence base would enable continual improvement of educational outcomes for young people and the systems that support them. Beyond the education context it would add to the stock of social policy evidence and add considerable value through data linkage work to support broader social policy development.

The National Catholic Education Commission (sub. 49, p. 5) focused on the opportunities that linkage provides for targeting aspects of disadvantage:

Although it may not be able to identify causal relationships, linked data can provide insights into educational disadvantage and make correlations between school outcomes and life outcomes.

Universal collections and comparisons are not desirable if they cannot be used to target policy interventions at a school or system level. There is a need for better data linkages, which can offer a clearer picture of student progress and explore the social and other determinants of educational outcomes.

The Minderoo Foundation (sub. 27, p. 5) similarly hailed the potential for data linkage to improve outcomes for disadvantaged children:

Multiple events and circumstance propel children towards educational and social failure (Jensen and Fraser, 2011). Comprehensive, linked data are instrumental to understand these external determinants at a population level and inform the development of appropriate policy responses.

Speech Pathology Australia (sub. 35, p. 15) referred to opportunities that data linkage potentially provided for early intervention to address issues for children with specific disabilities:

There is very strong research evidence that early intervention (prior to school commencement) offers the most significant value in terms of improving [speech, language and] communication outcomes for children. A linked, longitudinal data set offers an opportunity to monitor these children, determine their trajectory for educational outcomes and provide interventions (teaching or speech pathology for example) at an appropriate time point in their education whereby intervention is going to offer the most cost-effective improvements.

The Australian Institute of Health and Welfare (sub. 55, pp. 6–7) listed a range of benefits that linkage offers in a secure environment:

Data linkage is a practicable method to address data gaps in education and training data collections. Data linkage works as a powerful tool for identifying multiple appearances of individuals and for linking their information across data sets. This allows datasets, which collect different information about the same individual to be brought together in a secure and appropriately managed way. Where feasible and appropriate, data linkage can reduce data provider and respondent burden and maximise efficiency of data collection.

The ABS (sub. 78, pp. 2–3) focused on the potential benefits offered by linkage processes:

The ABS believes there are many potential benefits arising from the integration of datasets, particularly at the national level. These include:

- Consistent treatment of data through the integration process ensuring robust, comparable output. This in turn means that opportunities to compare natural experiments (for example exploring the impact of differences in school starting age) can be done efficiently and effectively;
- Consistent metadata;
- Streamlined release and access practices;
- Establishment of a 'one stop shop' model, where large volumes of subject matter are held in the one location supporting effective knowledge of, and easier access to, data and statistics.

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## Data linkage processes

Where personal information is collected and available to be used (identified data), linkage between datasets can be performed by matching names, date of birth, gender and other demographic data such as addresses across data collections. But as discussed in chapter 5, privacy and other legislative restrictions may prevent the use of personal information for a purpose other than the primary purpose the data was collected (such as in order to deliver a government service). In the absence of personal information, linkage relies on the use of statistical techniques to match records in different datasets (box 6.2). Importantly, linkage requires the use of the same linkage key in the different data collections.

### Box 6.2      **Deterministic and probabilistic linkage methods**

Data can be linked using either deterministic or probabilistic linkage methods. A combination of linkage methods may also be used in any one project, but the choice of method depends on the types and quality of linkage variables available on the datasets to be linked (AIHW and ABS 2012).

Deterministic linkage methods use common identifiers across different data sources known as statistical linkage keys (SLKs). Deterministic linkage involves simple matching of all complete SLKs. However, errors in key recording, statistical keys that are common to multiple individuals, and a failure to match keys belonging to the same individual all lead to reduced linkage success rates. The Telethon Kids Institute (sub. 15, p. 7) argued that these types of errors meant linkage keys were inferior methods of linking (compared to using personal information identifiers) because:

... a statistical linkage key is not sufficient to enable good quality, robust linkage. Data should include as much information as possible to inform (including name, address and date of birth) as there are often errors in point of collections, leading to incorrect SLKs. These errors lead to incorrect or missing matches when linking data. Having full identifying information reduces the likelihood of this error. There are many ways that linkage can be achieved, using identifying information that protects individual privacy.

The probabilistic method, on the other hand, links records using a combination of several representative identifiers such as name, gender, date of birth and address. Representative identifiers are used to compute the probability of two records from different data sources belonging to the same individual. The two records are then linked once a threshold probability level is reached (Gemici and Nguyen 2013, p. 12).

*Sources:* AIHW and ABS (2012); Gemici and Nguyen (2013); Telethon Kids Institute (sub. 15).

## Unique Student Identifiers

Unique student identifiers (USIs) (discussed in chapter 4) are also relevant to data linkage because they can effectively be used as linkage keys. However, the applicability of a USI for data linkage in education is limited by its education specific nature. While linking errors in the education domain would be less likely under a national USI, they would not facilitate the linking of education data with data from other domains (such as health), because different identifiers are used in those domains. The Office of the Australian



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Information Commissioner (sub. 69, p. 15) acknowledged this, saying that although unique identifiers were an effective means of facilitating linkage between disparate education datasets (in addition to benefits such as enhanced data accuracy and administrative efficiency):

... when calculating the potential costs and benefits of a [unique identifier] scheme, the Productivity Commission will need to address the problem of linking education data to data collections outside of the education sector.

There were mixed views among participants about the value of a unique identifier for linkage and research purposes (box 6.3). Opponents focused on specific issues such as the legislative barriers associated with an identifier created for one purpose which is then used for other purposes (including research and linkage), while others supported the concept in more general terms. Given the nature of this feedback and the Commission's view that statistical linkage keys are an effective substitute to USIs (at least for linkage purposes) it does not consider data linkage requirements provide a justification for the introduction of a national system for a USI in their own right.

## **6.2 Impediments to data linkage**

Although there is a large amount of education data collected on the early childhood, education and training sectors in Australia, much of it is not linked with potential explanatory data held in other education or non-education collections. In the words of the Australian Government Department of Education and Training (sub. 68, p. 1):

The capacity to link and fully utilise all the evidence available to bolster research, analysis and evaluation across the education system, sector and cohort level is minimal.

In large part, this situation reflects the fragmented and sector-specific nature of education and other data collections. There are more than thirty education data custodians and multiple custodians are often involved in collecting and managing components of the same dataset (table 6.1). Such fragmentation is in part the result of multi-jurisdictional responsibility for education service delivery, the different purposes for which education data is collected, and the ad hoc approach to determining data custodianship when new data collections are introduced.

But there are also broader challenges to effective and efficient education data linkage, including misaligned incentives and a risk averse culture among data custodians, the project-specific nature of current data linkage arrangements, and the comparability of data across datasets.

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### Box 6.3      **Participants' views on the role of unique identifiers for linkage**

Some participants viewed a unique student identifier (USI) as a drawback to inter-jurisdictional research. The Population Health Research Network (sub. 24, p. 6) said in this regard:

Reliance on the Unique Student Identifier, or any unique identifier, may limit intra and cross-jurisdictional research because:

- the use of a Unique Student Identifier will not solve the problem of linking education data to data collections outside of the education sector such as births, deaths, hospital, justice and housing
- there are legislative and ethical barriers to using an identifier created for one purpose which is then used for another purpose.

In general, probabilistic linkage using identifying variables such as name, address, date of birth and sex provides better linkage quality than a Unique Student Identifier when linking across years, geographical locations and data collections.

The Tasmanian Government (sub. 75, p. 5) also questioned the need for a USI and cited successful jurisdictional linkage research performed without such an instrument:

A USI is certainly not essential for good research outcomes. Quality research projects, which have been developed and progressed by the ABS with Tasmania and Queensland, demonstrate that fact.

The Office of the Australian Information Commissioner (sub. 69, pp. 14–15) highlighted the risks of using a USI beyond its primary purpose:

Any unique personal identifier raises a significant privacy risk of inappropriate data linking or use of the identifier without justification beyond the original purposes. Such linkages may combine personal information that has been collected for very different purposes and create rich datasets about individuals' interactions in society. Given the privacy risks associated with unique identifiers, it is important that identifiers are not permitted to be used beyond their original intention without sufficient consultation and scrutiny. The introduction of an identifier to the education sector therefore needs to be accompanied by strong legislative safeguards to limit the possibility of 'function creep'.

Other participants were more supportive on general grounds that a unique identifier would facilitate linkage processes. The New South Wales Government (sub. 79, p. 5) said:

A national USI will significantly improve the capacity of researchers to undertake better analysis, and make better comparisons, via complex data matching processes and data linkages.

Similarly, the Australian Curriculum, Reporting and Assessment Authority (sub. 62, p. 4) commented that:

The availability of unique student identifiers (with proper privacy protections) or, at least, a nationally consistent approach to student identity management, will greatly facilitate data linking.

The National Catholic Education Commission (sub. 49, p. 7) said that a USI would make education data more accessible:

There is a need to make student data more accessible for data linkage, which could provide further insights into student achievement. A unique student identifier (USI) is a way of addressing this need. It would be an opportunity for longitudinal data that could provide insights across the life cycle of learning — from early childhood to post-school pathways.

**Table 6.1 Australia's education data custodians**

<i>Jurisdiction</i>	<i>Data custodian</i>	<i>Data collection</i>
Commonwealth	ABS	Population Census National Schools Statistics Collection National Early Childhood Education Collection
	Australian Curriculum, Assessment and Reporting Authority (ACARA)	National Assessment Program – Literacy and Numeracy (NAPLAN)
	Australian Data Archive	Australian Early Development Census Longitudinal Survey of Australian Youth
	Department of Education	Australian Early Development Census Child Care Management System Programme for International Student Assessment (PISA) School Teacher Workforce Data
	Department of Social Services	Longitudinal Survey of Australian Children Longitudinal Survey of Indigenous Children
	National Centre for Vocational Education Research (NCVER)	Longitudinal Survey of Australian Youth
New South Wales	NSW Board of Studies	NAPLAN
	NSW Education Department, Catholic and Independent schools	Student administrative data Student performance data National Schools Statistics Collection National Early Childhood Education Collection
	Victorian Curriculum Assessment Authority	NAPLAN
	Victorian Department of Education, Catholic and Independent schools	Student administrative data Student performance data National Schools Statistics Collection National Early Childhood Education Collection
Queensland	Queensland Curriculum Assessment Authority	NAPLAN
	Queensland Education Department, Catholic and Independent schools	Student administrative data Student performance data National Schools Statistics Collection National Early Childhood Education Collection
	WA School Curriculum and Standards Authority	NAPLAN
	WA Education Department, Catholic and Independent schools	Student administrative data Student performance data National Schools Statistics Collection National Early Childhood Education Collection
Western Australia	SA Department of Education and Child Development	NAPLAN
	SA Department of Education and Child Development, Catholic and Independent schools	Student administrative data Student performance data National Schools Statistics Collection National Early Childhood Education Collection
South Australia		

(Continued next page)

**Table 6.1** (continued)

<i>Jurisdiction</i>	<i>Data custodian</i>	<i>Data collection</i>
Tasmania	Tasmanian Department of Education	NAPLAN
	Tasmanian Department of Education, Catholic and Independent schools	Student administrative data Student performance data National Schools Statistics Collection National Early Childhood Education Collection
ACT	ACT Education and Training Directorate	NAPLAN
	ACT Education and Training Directorate, Catholic and Independent schools	Student administrative data Student performance data National Schools Statistics Collection National Early Childhood Education Collection
Northern Territory	NT Education Department	NAPLAN
	NT Education Department, Catholic and Independent schools	Student administrative data Student performance data National Schools Statistics Collection National Early Childhood Education Collection

*Source:* Compiled by the Productivity Commission.

## Misaligned incentives and risk aversion

The incentives facing data custodians are not conducive to releasing the data they control to facilitate linkage (including releasing data directly to researchers). While benefits of data linkage are spread widely across the community, the consequences of adverse outcomes from the misuse of personal information are borne by the custodian and the individual or individuals whose privacy is breached. These concerns exist despite the availability of sophisticated data security protocols which significantly lower the risk of sensitive information being compromised (box 6.4). That said, there may also be concerns from data custodians that information could be used to detrimentally assess or compare performance between jurisdictions or to influence education funding (chapter 3).<sup>20</sup>

<sup>20</sup> A specific example given to the Commission was the federal government using parental income data as an input to jurisdictional funding allocations. The submission by the Australian Government Department of Education and Training gave an example of a lack of access to state and territory information detailing education expenditure for specific student groups, which made it harder to understand the impact of federal education investment (sub. 68, p. 4).

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## Box 6.4      **Protecting sensitive information**

### **The separation principle**

The separation principle is a mechanism used by data custodians and integrating authorities to protect the identities of individuals as part of the linking and merging process used to form integrated datasets. Under the principle, staff involved in linking datasets only see identifying information needed to create the linkage key between different datasets (such as name, address and date of birth) while those involved in analysing the integrated data only have access to de-identified data specific to project requirements. The principle means that no one working with the data can view both the linking (identifying) information together with the merged analysis (content) data (such as clinical information) in an integrated dataset.

Depending on project requirements and linkage models used, data custodians may separate the identifying information (such as name and address) from the content data (for example administrative or clinical information) before it is transferred to the integrating authority. Alternatively, where legislation and other requirements permit, data custodians may submit the entire encrypted dataset (containing both identifiers and project specific content information in one dataset) to the integrating authority. The integrating authority is then responsible for applying the separation principle, unless access to the identified integrated data is required and approved for the purpose of the project and permitted by legislation.

The separation principle is one way to protect the identities of individuals in datasets during the linking and merging process used to form the integrated dataset. After the linkage it is the responsibility of the integrating authority to appropriately confidentialise the data before it is made available to researchers, in accordance with the requirements of data custodians (NSS 2016a).

### **Five Safes model**

The Five Safes model is a framework for designing, describing and evaluating data access systems that maximise the value of data while minimising the risk that data will be misused. The model integrates analysis of opportunities, constraints, costs and benefits of different approaches to managing data access. It takes into account the level of data identification, likely users, the environment through which data are accessed and the statistical outputs derived from data use. The elements of the Five Safes model are:

- Safe People (can the researcher(s) be trusted to use the data appropriately?)
- Safe Projects (is the data to be used for an appropriate purpose?)
- Safe Settings (does the access environment prevent unauthorised use?)
- Safe Data (is there a disclosure risk in the data itself?)
- Safe Output (are the statistical results non-disclosive?)

According to the Australian Bureau of Statistics (2016, p. 11):

The ABS is currently trialling a new trusted data access model under the five safes framework. By carefully assessing people, projects, settings, data and output, appropriate controls can be put in place to maximise the use of data while protecting privacy and confidentiality. The five safes framework is already in use in the United Kingdom, New Zealand and the European Commission.

*Sources:* ABS (2016f); Desai, Ritchie and Welpton (2016); NSS (2016b).

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Risk aversion is not restricted to state and territory education authorities. A recent study (Allen et al. 2013) commented that ‘there is also a risk averse culture in Commonwealth departments which focuses on privacy risks and may not place sufficient weight on the benefits of the research findings and the risks of not doing the research’. This view was reinforced in the submission by the Australian Institute of Health and Welfare (AIHW, sub. 55, p. 9):

Despite this increasingly accessible infrastructure and repeated recommendations to increase data sharing across the Commonwealth ... the level of Commonwealth data sharing today is generally below the level required to appropriately harness the value of Commonwealth data holdings.

The practical consequences of risk-averse behaviour by data custodians is highlighted in a recent unsuccessful attempt by the AIHW to establish an enduring (ongoing) national early childhood development dataset (see below). A similar outcome befell an attempt by the ABS to develop a much broader integrated dataset of education and socio-demographic information constructed from existing data sources that was to be known as the Australian Longitudinal Learning Database (ALLD).

The ALLD was intended to link education data to the Census of Population and Housing and potentially to survey data; integrate early childhood education and care, schools and Census data with educational performance measures; link to vocational and higher education data; and integrate datasets from other areas (such as health and community services). As proposed, the ALLD would be constructed primarily using linkage techniques — making use of variables such as age, sex, geographic location and other socio-demographic characteristics to match records from one dataset to those in another — without identifying individuals. But progress with the ALLD has stalled. The Commission understands that this was primarily because of differences in resource capacity among stakeholders and a lack of jurisdictional support.

Avenues to address the misaligned incentives that face education data custodians include provision of formal guidelines or directions by federal and jurisdictional governments on the circumstances under which data should be provided for linkage purposes. These options are discussed in more detail in chapter 5.

## **Nature of current data linkage arrangements**

Differences in resource capacity (among other things) can affect the ability of individual jurisdictions to fund the necessary linkage infrastructure to conduct linkage projects. This is particularly the case for smaller jurisdictions. In recognition of the potential benefits available from data linkage, federal and jurisdictional governments have made significant investments in linkage infrastructure in recent years which has resulted in ‘robust data linkage models that ensure the safety, privacy and security of data used in integration projects’ (AIHW 2016c, p. 6). The focus of that infrastructure development has been on

the linkage of health datasets (and to a lesser extent urban development datasets), with linkage of education data much less common (table 6.2).

**Table 6.2 Jurisdictional linkage capability**

<i>Jurisdiction</i>	<i>Data linkage node<sup>a</sup></i>	<i>Linked education data<sup>b</sup></i>	<i>Linked health data</i>
New South Wales	Centre for Health Record Linkage	No	Hospital, cancer, death, perinatal, diabetes, maternal/infant health
Victoria	Victorian Data Linkages	No	Not available
Queensland	Queensland Centre for Health Data Services	No	Hospital admissions, perinatal, births/deaths/marriage
Western Australia	Western Australian Data Linkage Branch	Yes	Child protection, health, hospital, cancer, accident, mortality
South Australia	SA NT DataLink	AEDC, NAPLAN	Perinatal, cancer, hospital, emergency/injury
Tasmania	Tasmanian Data Linkage Unit	AEDC	Hospital admissions, emergency, perinatal, births/deaths, cancer
ACT	Centre for Health Record Linkage	No	Hospital, cancer, death, perinatal, diabetes, maternal/infant health
Northern Territory	SA NT DataLink	AEDC, NAPLAN	Perinatal, cancer, hospital, emergency/injury

<sup>a</sup> Each of the jurisdictional nodes form part of the Population Health Research Network. <sup>b</sup> AEDC refers to the Australian Early Development Census.

Sources: Adapted from AIHW (2014b, p. 22, 2016c, p. 6).

Linkage investment has included joint Australian and state and territory funding under the National Collaborative Research Infrastructure Strategy (NCRIS) for the development of a national data linkage network known as the Population Health Research Network (PHRN). The PHRN comprises a number of data linkage units or nodes which service each state and territory and national data linkage units which can perform State–State, Commonwealth–Commonwealth and State–Commonwealth linkages of large data collections (box 6.5). The ability to link Commonwealth data collections is technically enabled through participation by a Commonwealth accredited integrating authority — the AIHW.<sup>21</sup> The PHRN is based around the linkage model pioneered in Western Australia more than two decades ago (box 6.6).<sup>22</sup>

<sup>21</sup> The ABS and the Australian Institute of Family Studies are the only other Commonwealth accredited integrating authorities approved to link Commonwealth data collections.

<sup>22</sup> NCRIS funding (as well as funding from the Education Investment Fund) has also been made available to establish the Australian Urban Research Infrastructure Network (AURIN) — a network of data providers and researchers with access to shared demographic, social, health, infrastructure and environmental datasets for the purpose of urban settlement and infrastructure research. There are no education stakeholders involved in the network (AURIN 2016).

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### Box 6.5      **Population Health Research Network (PHRN)**

The PHRN commenced in 2009 and is funded by the National Collaborative Research Infrastructure Strategy (NCRIS). It comprises the University of Western Australia as lead agent, a centre for data linkage at Curtin University in Western Australia, a remote access laboratory located at the Sax Institute in New South Wales, and a network of project participants and data linkage units located in each Australian state and territory.

The PHRN enables researchers (in universities, government agencies, research institutes and other organisations) to access linked, de-identified data from new and existing research datasets, ad hoc survey datasets and administrative records (AGSF 2008, p. 3). NCRIS funding was aimed at addressing some of the same impediments to health data linkage that exist in the education sector:

The main impediments that inhibit effective use and linkage of available health data for improving health, wellbeing and health services arise from systemic factors. These include the interpretation of legislation and policy, a lack of resources to manage data access, and researchers' widespread misunderstanding of the principles of governance for datasets containing information on individuals. (AGSF 2008, p. 2)

A major advantage of the PHRN system is that its multi-jurisdictional presence allows for data ownership to remain within the jurisdictions where it is collected. A dedicated data-linkage centre facilitates linkage between jurisdictional datasets, and between these datasets and research datasets using demographic data.

Sources: AGSF (2008); PHRN (sub. 24).

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### Box 6.6      **Western Australian Data Linkage System**

Western Australia has been at the forefront of data linkage for more than two decades. The Western Australian Data Linkage System (WADLS) was established in 1995 to connect available health and related information on the Western Australian population. It includes data from over 40 collections across health, education and welfare sectors. The ability to link (identified) data at unit record level is a noteworthy characteristic. The WADLS involves the Western Australian Department of Health, the Telethon Kids Institute, the University of Western Australia and Curtin University, and receives funding from government, universities and fee-for-service work.

The WADLS has attempted to balance open access with control of data through a number of key protocols and policies. Government agencies retain control as data custodians and provide data extracts. A data-linkage unit grants access to any bona fide researcher with a Western Australian collaborator, who has obtained approval from the relevant data custodians, and the relevant Human Research Ethics Committee(s). Furthermore, all papers prepared using linked data are provided in draft form to data custodians prior to publication, with custodians given two weeks to review and provide feedback. The WADLS has also developed a best practice linkage protocol for data sharing between Western Australian and Commonwealth owned datasets. Strict data governance arrangements have ensured no information security breaches.

Source: Telethon Kids Institute (sub. 15).



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Several submissions to this inquiry raised the prospect of using the PHRN as a means of facilitating education data linkage. The submission by the PHRN (sub. 24, p. 2) itself suggested that existing infrastructure should be extended to education linkage projects.

Australia already has a national data linkage system which should be leveraged for delivery of high quality, linked education data. It is not restricted to health data. A number of education data collections including the Australian Early Development Census, NAPLAN and school enrolment data are already included in state/territory data linkage systems. If linkage variables are available there is no technical barrier to the linkage of other education data collections.

The PHRN framework was also endorsed by the Tasmanian Government in part because each jurisdiction retained control over its own data:

The [PHRN] ... provides an excellent model to achieve a structure which maintains the data in separate jurisdictions but provides file transfer infrastructure to enable cross-jurisdictional linkage for educational institutions and access for approved researchers. (Tasmanian Government, sub. 75, p. 5)

However, other participants noted that effective use of PHRN infrastructure for education data was constrained by the need to create de-identified and linkable datasets on a project-by-project basis (Fraser Mustard Centre, sub. 52, p. 3). Also, some participants noted that there is no nationally consistent approach to how data linkages can occur with differing governance arrangements and release protocols used by most data custodians (Edwards and Siphthorp, sub. 73, p. 4).

Health and medical research approval processes require ethical scrutiny for each proposal to ensure the integrity of the research, and adherence to relevant guidelines and legislation. This means that it is standard practice to destroy linked data resources after each approved research project has been completed. This significantly limits the usefulness of individual linkage projects and leads to duplication in the process of constructing linked datasets, and time delays. It also means that the procedures involved in preparing linked data for use by researchers (particularly data cleaning) need to be duplicated for each research project. To put the significance of this duplication into perspective, the Commission has been told that data cleaning accounts for between 35 and 40 per cent of the total time taken to complete a research project. According to the AIHW (2016c, p. 11):

It is widely recognised that the current data sharing system which relies on once-off linkages has proven to be slow and cumbersome to the point where it has not been effective at enhancing data sharing activities.

And in an education specific context, the submission from the Fraser Mustard Institute (sub. 52, p. 3) noted that the delays and duplication involved in data linkage projects had led the South Australian Department of Education and Child Development (DECD) ‘... to establish an enduring linked dataset for several cohorts of children and young people in South Australia (rather than individual project by project)’. The South Australian DECD’s establishment of state-specific enduring master linkage keys has in effect been achieved by internalising ethical approval requirements.

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The current system of data sharing (including through PHRN infrastructure) would be significantly improved and the time delays reduced if linkage keys established between datasets were retained for future use. The submission by the PHRN itself noted that while all states and territories have established enduring master linkage keys (for health data) to meet their own research needs, linkages between Commonwealth data collections are typically destroyed at the completion of each project. Enduring linkage between Commonwealth and state and territory health data collections is also rare. This adds considerably to time delays involved in linking large Commonwealth data collections (PHRN, sub. 24, p. 4).

Efforts to create enduring linked datasets between Commonwealth data collections are currently being trialled. One example is the Multi-Agency Data Integration Project (MADIP) which is a collaborative partnership between five Australian Government agencies: the Department of Health, the Department of Social Services, the Department of Human Services, the Australian Taxation Office, and the ABS.<sup>23</sup> While some participants voiced support for the role the ABS could play in maintaining enduring data resources (for example, sub. 19) others commented that the stricter confidentiality provisions governing the ABS's activities represented a less than ideal impost on wider access to data. The Australian Curriculum, Assessment and Reporting Authority (ACARA, sub. 62, p. 5) said in this respect:

... given limitations on access to data once held by the Australian Bureau of Statistics (ABS), this is not an ideal option [for an enduring data resource such as the ALLD].

But enabling ongoing linkage between Commonwealth and jurisdictional data collections remains a significant gap in current linkage arrangements. According to the AIHW (2016c, p. 13), the development of a national master linkage key (to point to the keys already established in the states and territories) is a key piece of infrastructure needed to enable effective data sharing activities:

[A] national master linkage key ... is the central pointer that is used to pre-enable or pre-link data on the source dataset ready for sharing. A national key would contain pointers to the existing master linkage keys in each state and territory unlocking their existing data system for the management of state and territory data.<sup>24</sup>

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The system of data linkage could be improved if linked data were retained by the linking authority.

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<sup>23</sup> An example of a recent MADIP project examined the uptake of Medicare-subsidised health services amongst people on different types of Government payments, such as Age Pension, Family Tax Benefit, and Disability Support Pension.

<sup>24</sup> The AIHW noted that a trial is already in place between the Australian, New South Wales and Victorian health departments and the AIHW to develop a master linkage key (based on Medicare Benefits Schedule and hospital data), and demonstrate how to interact effectively with jurisdictional data systems.

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A related issue involves the cost of accessing available linkage datasets (particularly Commonwealth datasets) and whether this acts as a deterrent to, or influences the nature of, the associated research undertaken.<sup>25</sup> A submission by SA NT Datalink to the recent Senate Select Committee on Health provides an example of the costs of accessing linkage infrastructure, and the possible consequences of costs of this size:

A further factor is the cost of linking and the provision of Commonwealth data to researchers (for example, in the order of \$30,000 to \$150,000 dollars for some relatively small projects) which has resulted in the project being withdrawn or not utilising the Commonwealth data. (SA NT DataLink 2015, p. 9)

The public interest nature of health, education and other research undertaken using linkage infrastructure means that full cost recovery of access to linked datasets would likely lead to inefficient outcomes (akin to those described in the quote above) from the community's view point. While an appropriate pricing structure would depend on the magnitude of the public interest benefits, the Commission notes that infrastructure funding provided under the NCRIS allows users access to the Secure United Research Environment (SURE) data research laboratory within the PHRN at a level well below full cost recovery. In fact, the Commission has been told that SURE users are charged 30 per cent of the full costs of providing these services (Sax Institute, pers. comm. 6 July 2016). In contrast, the AIHW (which is an accredited integrating authority in the PHRN) recently told the same Senate Select Committee on Health:

As you may be aware, the Australian Institute of Health and Welfare receives about 30 per cent of its funding from appropriations, so 70 per cent of our revenue comes from the provision of goods and services to others. We run our data-integrating authority and data-linkage services on a cost-recovery basis. That is, essentially, the cost of a salary plus the overheads associated with running buildings ... (SSCH 2016b)

## **Working with disparate administrative datasets**

The fragmented nature of education data collections, and the different purposes for which that data is collected, means that the definitions, metadata and other standards used in capturing that data have evolved independently (and, as a consequence, vary considerably). According to the ABS (sub. 78, p. 4):

There are a number of comparability issues in the national education and training data collections, pertaining mostly to the number of disparate systems used for data collection, variance in service starting ages (varying across jurisdictions and across sectors), and differences in scope for particular data collections. Reference periods also differ across the collections. These issues are not insignificant, where the national coherence of data is desired.

Source datasets are often not in standardised format and require substantial preparation before use (chapter 3). In particular, the nature of administrative data collections (where

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<sup>25</sup> There are also additional charges imposed by data custodians for costs associated with maintaining, (dis)aggregating, storing and cleaning data which requires specialist expertise and infrastructure.

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the primary purpose is not for research) means there is considerable effort needed to clean and prepare this data for linkage. Typically, administrative data custodians do not have the resources (including specialist expertise and infrastructure) needed, or a mandate to maintain (dis)aggregate, store and clean data. This is in contrast to data collected by agencies such as the ABS (including survey and census data) and transactional collections (such as Medicare and Pharmaceutical Benefits Scheme data) where design features ensure higher data quality standards, including the availability of metadata, which makes linkage processes more efficient.

In its submission to this inquiry, the AIHW (sub. 55, pp. 12–13) cited a comprehensive review it recently undertook to determine the consistency and alignment of data items across 14 national education and training administrative and census data collections. The commissioned work was conducted to enhance the comparability, quality and coherence of information collected across early childhood, school education, vocational education and training, and higher education sectors. The AIHW found that only about 25 per cent of education data items currently collected were fully consistent with endorsed national data standards in its Metadata Online Registry (METeOR) (even though the data was collected to agreed standards within the specific data collection). Moreover, only 6 of 11 education data collections were assessed to have the core and supplementary linkage items required to enable data linkage with other datasets (AIHW 2015a).

The implications for education and other data linkage can be significant in terms of the resources required to standardise, clean, develop and understand data after access approvals are in place. As an indication of the magnitude of the associated problems the AIHW (2016c, p. 6) has noted that the greatest delays in the linkage process stem from data preparation where data is not pre-enabled (ready to be brought together with other datasets), pre-cleaned and pre-standardised, and from the approvals required for data release.

The AIHW (2016) suggested that this ‘curation’ function could either be performed centrally, at source [subject to resourcing constraints] or by integrating authorities. The AIHW went on to recommend a regularised data systems approach be adopted that included the use of a number of existing pieces of supporting data infrastructure:

Greater investment in metadata and national standards will greatly assist in preparing data to make sharing and linking easier and faster. Infrastructure, such as the open release of the Geocoded National Address File (G-NAF) and AIHW’s METadata Online Repository (METeOR) provides a key role here. (AIHW 2016c, p. 4)

These issues illustrate the diverse challenges involved in working with disparate administrative datasets. Many of these challenges were encountered in the efforts by the AIHW to build a National Early Childhood Development dataset (box 6.7). The framework set out in chapter 3 provides an approach to assess the relative merits of overcoming these issues in a cost-effective manner.

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**Box 6.7      National Early Childhood Development (NECD) dataset**

In 2012 the Australian Institute of Health and Welfare (AIHW) was commissioned to develop an enduring and linked National Early Childhood Development Researchable Data Set (NECD RD) spanning 15 years of life from birth to high school.

It was intended to foster research in early childhood development, across health, human services and early childhood education and care and to provide an evidence base on early childhood development in Australia. For each child, it would have contained information on health, development, school readiness, early childhood education and care, school attendance and educational achievements. A dataset such as the NECD RD would have had the potential to strengthen the evidence base for child development, from which sound policies and programs could be developed (AIHW 2014b).

Several challenges were encountered in attempting to develop the dataset. These included privacy constraints, the ongoing nature of the dataset and incomplete data on children who did not attend pre-school. Moreover, at the time, the Early Childhood Education and Care collection did not collect unit record level data for parts of Queensland, South Australia and Western Australia and in the Australian Capital Territory data were only collected from Australian Government preschools. This meant that information about children attending Catholic or Independent preschools was not available, and the missing unit record level data made it more difficult (if not impossible) to define information for the cohort of children who did not go to preschool (AIHW 2014b, p. 24).

The project is currently on hold. AIHW was negotiating agreements with each state and territory and has been awaiting further resources from the Australian Government to gain approval to procure and link data, including seeking relevant approval from state and territory ethics committees. Some organisations had indicated difficulties in providing data, but expressed support for the NECD RD.

*Sources:* AIHW (2014b; sub. 55).



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## 7 Creating and using evidence

### Key points

- Australia needs to invest in high-quality evidence that contributes to greater understanding about what works best to improve education outcomes.
- This investment will require national policy effort, including support for the:
  - development of research priorities
  - commissioning of high-quality research
  - adoption of rigorous research quality control processes
  - dissemination of high-quality education evidence
  - development of researcher capacity.
- But creating evidence will not be sufficient. Knowledge needs to be mobilised — it needs to change decision makers' behaviour in ways that lead to improved outcomes. The most effective ways of achieving this goal in Australia are unknown.
  - Research effort needs to target this issue.

Increased expenditure on education and considerable reform efforts have not translated into improvements in student achievement (chapter 1), and policy makers are still searching for ways to improve outcomes. Insights lie in evaluations of what happens in education settings. To create that evidence, top-down monitoring and benchmarking have to be complemented by bottom-up evaluation of what works best in schools, classrooms and early childhood education and care settings to improve student outcomes. But simply creating evidence is not sufficient — it needs to inform decision making (chapter 2). High-quality evidence on what works best, and the use of evidence in decision making are gaps in Australia (chapter 3).

This chapter considers what is needed to fill those gaps. The creation of high-quality evidence that contributes to greater understanding about what works best is addressed in section 7.1, and ‘knowledge mobilisation’, or the application of high-quality evidence in education decision making, is discussed in section 7.2. In other words, issues relating to both supply of, and demand for, education evidence are canvassed. Institutional arrangements targeting solutions to the gaps are discussed in chapter 8.

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## 7.1 Creation of education evidence

### A different type of research is needed

Research about what works best ...

Many of the questions for which decision makers in the education system need answers are descriptive — for example, ‘how well are students performing’, ‘how are resources distributed’ and ‘how many students are undertaking initial teacher training’? Questions of this type are associated with monitoring and benchmarking, or a top-down approach to data and evidence (chapter 2). Answering them typically requires large datasets and relatively simple data analysis.

Questions like ‘will the factors that improve outcomes in this successful school work in other schools’, ‘what effect does this program have on student outcomes’ and ‘what is the most effective teaching practice for this material’ are causal. They are associated with evaluation of what works best to improve outcomes, or a bottom-up approach to data and evidence. High-quality, or rigorous, analysis of questions like this typically requires small scale datasets that are often question specific, and sophisticated research methods. While analysis of larger datasets might suggest targets for closer examination, for example, outperforming schools or factors associated with better outcomes, like quality childcare, it cannot identify which interventions work best to improve outcomes. (This is not to say that analysis that identifies targets for closer examination is not important. It is, and exploratory research of this type is discussed in the following section.)

Causal questions go to how an individual’s (or a group of individuals’) outcomes are different as the result of being exposed to, or ‘treated by’, a policy, program or practice. In effect, what decision makers want to know is how the treated individual’s (or group’s) outcomes compare with what they would have been in the absence of the treatment. Clearly, it is impossible to observe both the effects of treatment and the counterfactual — no treatment — for the same individual (or group of individuals).

Statisticians use a range of techniques to address the lack of a counterfactual and test whether a treatment causes an outcome (box 7.1). However, these techniques are not equal in their potential to deliver high-quality evidence. In a commonly suggested evidence hierarchy (CESE 2016c), meta-analyses of randomised controlled trials and individual trials are the gold standard (and are the norm in health research). Meta-analyses of studies based on natural (or quasi) experiments and individual studies rank next, with regression discontinuity analyses typically preferred. Before and after studies rank below natural experiments, and research based on expert opinion and theoretical conjecture ranks last.



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## Box 7.1      **Techniques for estimating the effect of an intervention**

### **Randomised controlled trials**

Individuals are randomly assigned to treatment and control groups before an intervention is implemented. The treatment group receives the intervention; the control group does not. If assignment is random, and the groups are sufficiently large, the average characteristics of each group should be the same. Provided the only difference between the groups is receipt of the treatment, any difference in average outcomes can be attributed to the treatment.

### **Natural experiments**

#### *Regression discontinuity analysis*

Individuals who are very close to the cut-off point for receipt of an intervention are compared. For example, if an entry score of 90 is required to attend a selective school, the outcomes of students who just made the cut-off and those who did not can be compared to test the effect of selective schooling. The assumption is that those who are very close to the cut-off have the same characteristics on average, and luck was the only factor in determining who received the intervention. Situations that give rise to data like this occur relatively infrequently, and only for a limited range of interventions.

#### *Difference-in-differences approach*

This approach identifies a control group of individuals that is similar to the treatment group and compares the change in outcomes experienced by the treatment group with the change in outcomes experienced by this control group.

#### *Matching*

This approach identifies a group of individuals with similar observed characteristics to the treatment group and compares the outcomes (rather than the change in the outcomes) of the two groups. An issue with this approach is that it does not account for potential differences in the unobserved characteristics of the two groups. It is, therefore, not possible to confirm whether a difference in outcomes is due to the intervention or differences in the groups' unobserved characteristics.

#### *Cross section regression analysis*

This approach assesses the difference in outcomes between those who received an intervention and those who did not, using regression analysis to take account of other factors that might be associated with the outcome of interest. An issue with this approach is that omission of a factor that is differentially associated with the outcome for each group will bias the measure of the effect of the intervention.

### **Before and after studies**

This approach looks only at the treatment group and effectively assumes that the group's outcomes in the absence of the intervention would have been the same as their outcomes before the intervention. In other words, all changes in the outcome are attributed to the intervention. This is a strong assumption if there are other factors that might have affected the outcome.

*Sources:* Borland et al. (2004); Leigh (2009).

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Evidence standards used by the What Works Clearinghouse, a central source of information in the United States about innovations, practices and products in education, endorse only a subset of these techniques.

The [What Works Clearinghouse] Evidence Standards identify studies that provide the strongest evidence of effects: primarily well conducted randomized controlled trials and regression discontinuity studies, and secondarily quasi-experimental studies of especially strong design. (IES nd, p. 1)

While randomised controlled trials have significant potential to contribute to a high-quality evidence base, they have been seldom used in Australian education research. Several inquiry participants advocated their use, including Biddle and Breunig (sub. 25), the Murdoch Childrens Research Institute (sub. 47), the Fraser Mustard Centre (sub. 52) and Social Ventures Australia (sub. 59).

A key concern with randomised controlled trials lies in the ethics of one group receiving a treatment that may advantage or disadvantage them. But continuing to use approaches of unknown efficacy could also be seen as unethical. Ethical issues have to be considered as part of research approval processes. (The role of ethics committees is discussed in the context of linking data in chapter 6.) In addition, although some students might be disadvantaged through trial participation, the potential benefits from trial insights are significant (an example of a UK trial is presented in box 7.2).

If a randomised controlled trial is deemed to be infeasible, whether for ethical or other reasons, care should be taken to adopt an evaluation method that delivers evidence of sufficiently high quality. If that is not possible, scarce evaluation resources should be focused on other questions.

### **Box 7.2      An example of the value of trials**

#### **Teaching assistants in the United Kingdom**

The United Kingdom employs about 255 000 teaching assistants at a cost of over £4 billion a year (or 10 per cent of the education budget). Evidence suggested they made little difference on average to students' achievement, but that effects varied between classrooms. In classrooms where teachers and assistants worked collaboratively together the effects were positive. In classrooms where the assistant substituted for the teacher rather than supplementing them, students (particularly those from disadvantaged backgrounds), tended to perform worse than peers taught only by a teacher (EEF 2015a).

Since 2011, the Education Endowment Foundation has run six randomised controlled trials testing the impact of giving teaching assistants high-quality support and training in delivering structured sessions to small groups or individuals. The results showed that students of the trained teaching assistants made three to four months more progress than students whose assistants were deployed as usual. At relatively little additional cost, teaching assistants who are used effectively can have a marked impact on student learning.

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... supported by high-quality exploratory analysis

Some potential targets for analysis of what works best to improve education outcomes will be relatively easily identified — literacy and numeracy programs, for example, or the use of information technologies in the classroom. Others can be uncovered through exploratory analysis of the relationship between an outcome of interest and factors that might affect it. Whether a relationship is causal can then be tested using the types of analysis discussed in box 7.1.

A key requirement for high-quality exploratory analysis is that it tests the impact of ‘within-system influences’, that is, those that can be changed by the school or early childhood education systems, or factors that affect the relationship between a within-system influence and an outcome. For example, a within-system influence might be the quality of childcare, and the effect of quality childcare on subsequent education outcomes might be affected by a child’s home background.

Exploratory analysis might draw on large scale national data. The Commission, for example, recently used data of this type to study Indigenous Primary School Achievement (PC 2016). That work identified a set of schools where students do better than might be expected, given their characteristics, and recommended systematic ‘under the hood’ analysis to identify the factors that might account for this out-performance.

Longitudinal datasets of the type described in chapter 3 and appendix C can also support exploratory analysis. Warren and Haisken-DeNew (2013), for example, found a significant positive association between preschool attendance and Year 3 student achievement using the Longitudinal Survey of Australian Children. (They then tested for causality in this relationship using a matching approach.)

Exploratory analysis can also draw on smaller scale education datasets. The ABS (2014a), for example, found a negative relationship between the number of hours Tasmanian children were enrolled in preschool and developmental vulnerability in the first year of school using linked Census and Australian Early Development Census data — more hours were associated with lower vulnerability.

*... and a register of education datasets and associated metadata is needed*

Exploratory analysis will be constrained if information about the existence and metadata (contents and characteristics) of education datasets is not readily available.

A number of inquiry participants (including the Fraser Mustard Centre (sub. 52), the Telethon Kids Institute (sub. 15) and Learning Sciences Institute Australia (sub. 48)) noted a need for more complete and accurate metadata for education data collections.

Metadata repositories support research in other sectors. The Australian Institute of Health and Welfare, for example, maintains a metadata online registry (METeOR) for the health,

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community services and housing assistance sectors (AIHW 2016a). METeOR allows for the storage, management and dissemination of nationally-endorsed metadata standards.

An online metadata repository could play an important role in bringing education datasets to researchers' attention and clarifying the information that could be available, particularly in administrative datasets.

#### DRAFT RECOMMENDATION 7.1

The Australian, state and territory governments should ensure that an online metadata repository for education data collections is created. The approach used by the Australian Institute of Health and Welfare could serve as a model.

### In conclusion

The Commission supports investment in high-quality research, particularly randomised controlled trials, to build the Australian evidence base on what works best to improve education outcomes. While the use of trials might give rise to concerns about ethics, there are processes to address these and the potential benefits of this type of research suggest these concerns, generally, are not sufficient reason to avoid a trial approach. National policy leadership is required — that is, the Australian and state and territory governments will need to work together. That joint work should support the development of an infrastructure that ensures that research priorities are identified, high-quality research is commissioned, the quality of completed research is verified and research findings are disseminated. It will also need to ensure that potential policy impediments are addressed.

### National policy leadership is required

The problem is not that education research is not happening in Australia. Expenditure on all education research (including post-secondary education) was about \$470 million in 2014 (ABS 2014b, 2015c, 2016d). It is hard to say whether this is sufficient. As some inquiry participants have noted, spending on education research is lower than in health, in both absolute and relative terms (box 7.3). However, what can be said, is that greater effort needs to go into producing high-quality and relevant research, and in making the findings from that work available to decision makers.

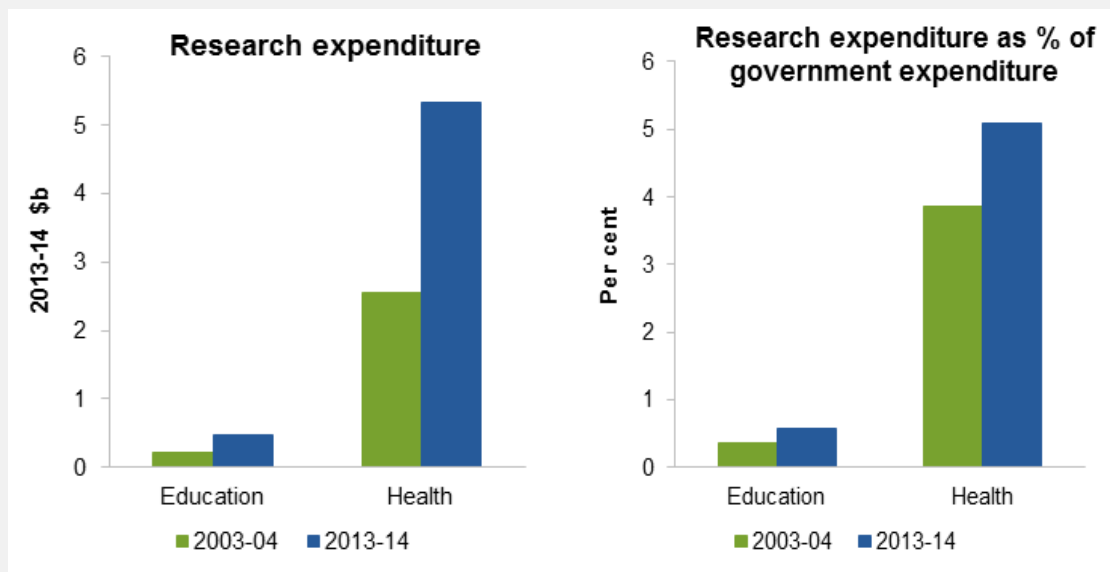
As noted above, the type of research that delivers high-quality evidence on what works best is rare. Furthermore, the quality and relevance of the academic research that is produced has been criticised. Over 40 per cent of education research units evaluated in a recent assessment of the quality of Australian university research were rated as below world standard — the worst performance of any discipline (ARC 2015c, p. 14). And, as the Fraser Mustard Centre

(sub. 52, p. 4) noted, '[m]uch of the research [in the education system] is qualitative in nature and does not routinely determine student level impact or outcomes'.

### Box 7.3 A comparison of expenditure on education and health research

Expenditure on health research is considerably larger than on education research, both in absolute terms and relative to government expenditure on services. Not surprisingly, businesses and private non-profit organisations accounted for a much larger share of expenditure on health research — about 35 per cent in contrast with about 13 per cent for education. The source of these research funds is unknown. Some would have been provided by governments through consultancies and research grants. Some would have been funded by donations and some by the organisations themselves — a more likely scenario in health. The vast majority of expenditure on education research (83 per cent) was undertaken by higher education organisations, in contrast with just over 50 per cent for health. (Governments were responsible for the remaining expenditure in each sector.) In both sectors, research expenditure more than doubled in real terms in the decade to 2013-14, and grew faster than government expenditure.

#### Research expenditure in health is much larger than in education<sup>a,b,c</sup>



<sup>a</sup> Data on research expenditure cover expenditure by higher education organisations, businesses, private non-profit entities and the Australian, state and territory governments. Data on total government expenditure only cover expenditure by the Australian, state and territory governments. <sup>b</sup> Research expenditure data for private non-profit entities and governments are for 2002-03 and 2012-13. <sup>c</sup> Data on education research cover all education sectors, including early childhood, schools and tertiary education. Data on government expenditure cover operating expenses for preschool, school and tertiary education. They do not include early childhood education and care other than preschool.

Sources: Research expenditure — ABS (*Research and Experimental Development, Businesses, Australia, 2013-14*, Cat. no. 8104.0; *Research and Experimental Development, Higher Education Organisations, Australia, 2014*, Cat. no. 8111.0; *Research and Experimental Development, Government and Private Non-Profit Organisations, Australia, 2012-13*, Cat. no. 8109.0); Government expenditure — ABS (*Government Finance Statistics, Education, Australia, 2013-14*, Cat. no. 5518.0.55.001).

An additional issue is that a considerable share of the research produced, commissioned or supported by state and territory education departments is not made public:

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Many data analyses and reports are ‘fugitive’, in the sense that their existence is often not widely known, and access to them is often difficult. Their quality is also often not tested in the arena of open debate. (LSIA, sub. 48, p. 2)

A search of some state websites adds weight to this point. The Victorian Department of Education, for example, maintains a research register. A search revealed 260 projects with a 2015 indicative completion date (VicDET 2013). The 2014-15 Annual Report listed 23 major research and development activities (with a cost of more than \$100 000) and expenditure on about 100 consultancies in total (VicDET 2015a). In contrast, the departmental web page titled ‘Research & Evaluation Publications’ lists 22 recent publications, with publication dates spanning 2011 to 2015 (VicDET 2016b).

When research is not open to scrutiny its quality is difficult to judge and the opportunity for others to benefit from the findings are missed.

National policy leadership is needed if the Australian, state and territory governments are to exercise their responsibility under the National Education Reform Agreement to:<sup>26</sup>

... work together to develop, publish and disseminate evidence on what works best in schools  
... including by researching, sharing and evaluating improvement and innovation strategies.  
(COAG 2013, p. 10)

In discussing the range of activities needed to build a high-quality and relevant evidence base, three Australian organisations (the National Centre for Vocational Education Research (NCVER), the Australian Housing and Urban Research Institute (AHURI) and the National Health and Medical Research Council (NHMRC)) and two international agencies (the Education Endowment Foundation (EEF) in the United Kingdom and the Institute of Education Sciences (IES) in the United States), are used to illustrate the types of approaches that might be adopted.

## **An education research infrastructure is needed**

### **Research priorities must be identified**

Concerns about quality and relevance have led some OECD countries to be quite prescriptive, through priority setting, about the foci for government-funded education research. In response to widespread criticism of academic research, the United Kingdom established an independent body in 1999, the National Education Research Forum, to develop a national research strategy, including priorities (Gough 2013). Although the Forum was defunded in 2006, research priorities for education and children’s services are now published by the UK Department for Education, and guide the commissioning of

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<sup>26</sup> There are two education agreements in force: ‘Queensland, Western Australia and the Northern Territory operate under the NEA [National Education Agreement] in agreement with the Commonwealth. ... New South Wales, Victoria, South Australia and the Australian Capital Territory operate under the NERA [National Education Reform Agreement] in agreement with the Commonwealth.’ (DPMC 2016, p. 22)

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research (UKDfE 2014). A key priority — raising the attainment of economically disadvantaged children (aged 3–18), particularly through literacy and numeracy initiatives — led to a grant in 2011 of £125 million to the EEF. The Foundation anticipates spending £200 million over 15 years on rigorous project evaluations (EEF 2016a).

In the United States, the agency with primary responsibility at a federal level for education research is the IES within the Department of Education, which was established in 2002 in response to concerns about the quality of education research. The *Education Sciences Reform Act 2002* that established the Institute requires it to identify research priorities.

National research priorities are used in other sectors in Australia. In vocational education and training (VET), for example, the first national research strategy was published in 1997 ‘to ensure the findings of VET research and evaluation can help various stakeholders in the VET system make better decisions to improve the quality and effectiveness of training’ (Robinson 1997, p. 2). Research funding allocations are still guided by national research priorities (NCVER 2016). Similarly, in housing, research priorities guide the research program administered by the government-funded AHURI (nd).

All of these agencies engage in consultation with research consumers and producers in developing priorities.

A number of inquiry participants have advocated a national education research strategy (for example, RIPPLE, sub. 45, MCRI, sub. 47 and the Mitchell Institute, sub. 31). Setting priorities would be a core element of such a strategy. In addition, the terms of reference for the education Ministerial Council (the Education Council) that were approved by COAG in November 2015 include development of a research plan, which would presumably include priorities.

The Commission supports the development of research priorities in school and early childhood education. Decision makers within the education system, researchers and the broader community should be consulted during the development of these priorities.

### High-quality research needs to be commissioned

In pursuit of high-quality evidence, agencies in some countries prescribe the types of techniques that should be used for government-funded education research and have rigorous project selection processes. The EEF, for example, advises applicants that it will work with them to ensure that funded evaluations are robust, and that the majority of funded evaluations are randomised controlled trials (EEF nd). Initial applications are screened by EEF staff. An independent evaluator and EEF staff then work with shortlisted applicants to develop a detailed project plan and costing. Applications are then considered by a grants committee before a final funding recommendation is made.

The EEF also requires that all projects collect data on the cost per pupil involved in a trial and that project plans state how these costs will be evaluated (EEF 2015b). Data on costs

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enables comparison of the cost effectiveness of an initiative, and identification of those initiatives which lead to the largest improvements in achievement at lowest cost.

In the United States, applicants for IES funding for projects that assess the impact of initiatives to improve outcomes, are advised to:

... use study designs that will yield impact estimates with strong causal validity and that, for example, could meet What Works Clearinghouse standards without reservations. Generally and when feasible, they should use designs in which the treatment and comparison groups are randomly assigned. (IES 2013, p. 21)

Applicants for exploratory research grants are advised that their projects must analyse primary or secondary data and result in a conceptual framework that either identifies the relationship between a within-system influence and an outcome, or factors that mediate or moderate that relationship, or that has both of these characteristics (IES 2014).

Grant applications are assessed through a process of scientific peer review similar to processes used by the US National Institutes of Health (SRO nd). Reviewers, with strong track records in producing quality research, assign scientific merit scores to proposals. These are used to identify top ranked applications for further consideration by panels of reviewers.

Closer to home, the Australian Research Council and the NHMRC, for example, use peer review processes in allocating research funding.

The Commission supports the commissioning of high-quality education research. A rigorous process should be adopted for project selection, including the provision of guidelines to applicants about the sorts of research that will be considered. In addition to specifying the types of research that should be undertaken, the guidelines should require assessment of initiatives' cost effectiveness. Given limits on education budgets, evidence for decision makers about what works best to improve outcomes needs to be prioritised on the basis of cost effectiveness.

### The quality of the research needs to be verified

A range of processes can be used to ensure that completed research is robust. These include independent project evaluation, peer review of research outputs, publication of all outputs (irrespective of findings) to enable scrutiny and debate, and the provision of project data for secondary analysis. Processes like these are used by the EEF and IES.

In the case of the EEF, evaluations of both the impact and process of an intervention are conducted by an independent evaluator (Humphrey et al. nd). (The process evaluation examines how an initiative was implemented and the contributors to successful delivery.) In addition: project findings are verified through secondary data analysis commissioned by the Foundation; all evaluations are made public, whatever the result; academics are encouraged to publish evaluations through peer review processes; and all project data are made available to researchers for secondary analysis.



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In the case of research funded by the IES, the *Education Sciences Reform Act 2002* requires peer review of all research, statistics and evaluation reports conducted or supported by the Institute (SRO nd). In addition, since 2012, grant recipients have had to submit peer reviewed publications to the Education Resources Information Centre, an online research repository sponsored by the Institute and, in 2013, the Institute began to implement a requirement that project data be made available for secondary analysis (IES 2012).

Research commissioning bodies in other sectors in Australia, like the NCVER and AHURI, use some of these processes.

The Commission supports the adoption of rigorous quality control processes for research that contributes to understanding about what works to improve outcomes. The processes should include peer review, publication of all outputs and provision of data for secondary analysis by other researchers.

### Research findings need to be disseminated

All of the bodies mentioned above work to disseminate (distil and communicate) research findings.

The EEF summarises findings from both EEF-funded and other high quality research within two ‘toolkits’ — one for school education, one for early years education. Indicators of the cost, evidence strength and impact of interventions within different topic areas are available at a glance on the toolkit homepages. Clicking through on a topic yields more detail, including practice resources for educators. (Evidence for Learning, supported by Social Ventures Australia, is an Australian version of the toolkit (SVA 2016).) The IES oversees the What Works Clearinghouse which reviews research on policies, programs, practices and products in education. High-quality evidence is summarised in effectiveness ratings for different interventions and practice guides (IES 2016). In addition to the Clearinghouse, as noted above, the IES sponsors an online research repository, the Education Resources Information Centre.

Of the Australian agencies, the NCVER publishes an annual research summary and AHURI publishes policy briefs. The NHMRC goes further, summarising research findings in practice guidelines.

A number of inquiry participants including the Australian Council for Educational Research (sub. 32), the Smith Family (sub. 60) and the Grattan Institute (sub. 61) have called for a clearinghouse for high-quality evidence. The Australian Council for Educational Research (sub. 32, p. 4) noted that an evidence base:

... comprising scientific evidence is important to improve outcomes in Australian education. In this context, the ‘Evidence for Learning’ initiative of Social Ventures Australia (<http://evidenceforlearning.org.au/>) to make evidence about what works and why more widely available to schools and education systems is a commendable development.

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While many sources of information exist (chapter 3), a central repository of trusted, high-quality evidence, including resources to support practitioners, is a key input to ensuring decisions are informed by the best available evidence.

The Commission supports a central clearinghouse that efficiently and effectively disseminates high-quality evidence. The clearinghouse should become a high profile, central, trusted source of high-quality Australian education research evidence, including resources for practitioners.

## **Potential impediments to a new research infrastructure**

### **Researcher capacity**

Does Australia have the research capacity to build high-quality evidence on what works best in education? Input from some inquiry participants suggests not. For example, the Fraser Mustard Centre (sub. 52, p. 4) noted that:

In the education system there is a lack of research capacity to conduct high quality rigorous research that can help inform policy making.

The nature of the evidence gaps also suggests that investments in capacity building will be needed to develop researcher skills in some high-quality research techniques. Both the EEF and IES support capacity building. The EEF has developed resources for evaluators, and the process of evaluators working with project teams leads to knowledge and skills transfer. The IES funds PhD and post-doctoral programs and short courses for researchers and statisticians.

The Commission anticipates that Australia will need to invest in researcher capacity to undertake high-quality education research. Strategies should be put in place to build this capacity.

### **Research costs**

Randomised controlled trials may cost more than is typical for education research projects. In 2014-15, the EEF awarded grants totalling £12.1 million (about \$21 million) to 24 projects, or an average of just over £500 000 per project (about \$880 000) (EEF 2015c). In contrast, the UK Department for Education spent £5.9 million on about 80 projects, or an average of about £74 000 per project (UKDfE 2015). In July 2016, the National Center for Education Research within the IES announced funding of about US\$105 million (\$140 million) for 57 projects (NCER 2016). Of these, 24 aimed to test the efficacy of an initiative using randomised controlled trials or natural experiment approaches. Most of these projects each received about US\$3.3 million (\$4.4 million). In contrast, exploratory and measurement projects typically received about US\$1.4 million (\$1.9 million) each.

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In Australia, the average Australian Research Council grant in 2014-15 was about \$480 000 (ARC 2015a), and a search of the grants dataset using the term ‘education’ suggests that education related projects tend to receive less than this (ARC 2015b).

Some inquiry participants (Biddle and Breunig, sub. 25; SVA, sub. 59) emphasised that use of administrative data in trials can reduce their cost. Treatment and control groups need to have similar characteristics, for example, location, prior education achievement and socioeconomic status. Information of this type is often held in administrative datasets, and access to it would reduce the costs of identifying random samples of students. Administrative data that include information on student learning outcomes could also be used in evaluating the effectiveness of interventions, thus reducing trial costs. Data access issues are discussed in chapters 5 and 6.

While randomised controlled trials may be higher cost than other forms of education research, they also have the potential to be of much greater benefit. On the basis of this type of research, decisions can more confidently be made to discontinue, or not roll out, ineffective programs and the extension of cost effective initiatives can be supported. This means education expenditure can be used more effectively and efficiently. As the Behavioural Insights Team in the UK Cabinet Office (Haynes et al. 2012, p. 16) suggested:

Rather than considering how much an RCT [randomised controlled trial] costs to run ... it might be more appropriate to ask: what are the costs of not doing an RCT?

Australia’s experience of increasing education expenditure without improvements in results suggests that the costs of not having a high-quality evidence base are substantial.

#### DRAFT RECOMMENDATION 7.2

The Australian, state and territory governments should pursue a national policy effort to develop a high-quality and relevant Australian evidence base about what works best to improve school and early childhood education outcomes. In particular, five activities need to be supported:

- development of research priorities
- commissioning of high-quality education research
- adoption of rigorous research quality control processes
- dissemination of high-quality evidence
- development of researcher capacity.

## 7.2 Improving the use of education evidence

Simply creating evidence is not enough. Evidence will only lead to improved education outcomes if it is used to inform decision making and change behaviour. But use of evidence

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by decision makers within the education system, including policy makers, educators, parents and students is a gap in Australia (chapter 3). This section first looks more closely at the capacity and capability of Australian decision makers to use evidence (both data and information generated from data), and then at improving the use of evidence.

## **Decision makers' capacity and capability to use evidence**

### **Evidence use by education policy makers**

The importance of an evidence based or evidence informed approach to policy and program design has been emphasised by many commentators, not least the Productivity Commission (Banks 2009a; PC 2010). However, evidence from capability reviews and studies of research utilisation, along with the presence or otherwise of research and evaluation groups within government departments, suggests that education policy makers' capacity and capability to use evidence are variable.

#### *Insights from reviews and studies*

A recent review of public sector data management found that capacity and capability in data use are patchy across the Australian Public Service and that:

... there is a global undersupply of data and analytics skills ... Ready-for-work graduates with data capabilities are in short supply ... [and] most agencies expressed a need for more data capabilities. (DPMC 2015, p. 20)

The same observation almost certainly applies for state and territory public services, and for non-government education associations.

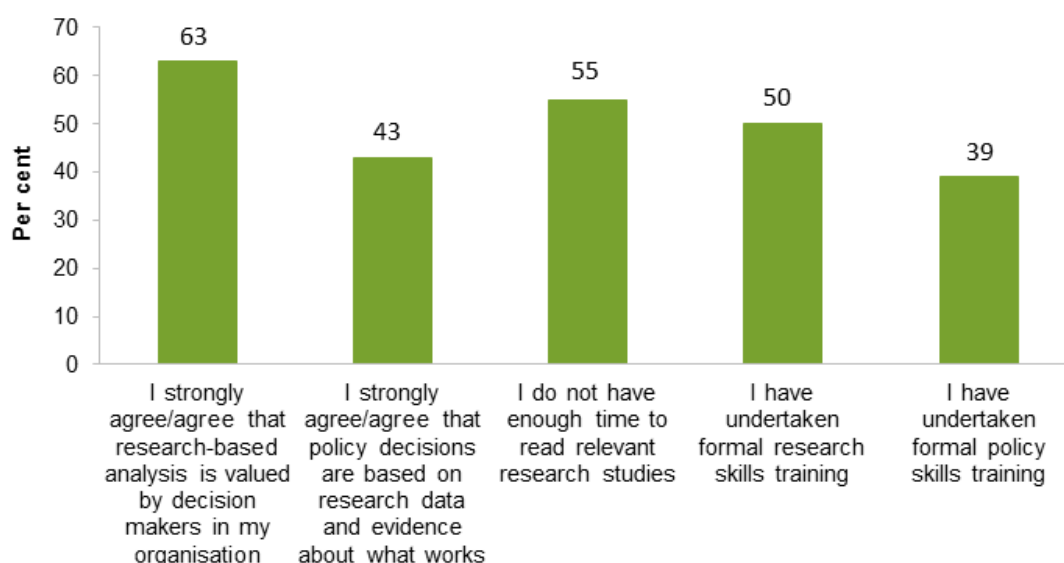
A study of the impact of social science research on policy decision making in Australia by University of Queensland researchers (ISSR 2016) provides some insights into analytical capacity and capability in education departments. The study was motivated by the observation that:

Academics lament that policy-makers ignore their research, while policy decision-makers argue that academic research is largely irrelevant to their needs. (ISSR 2016, p. 1)

Study inputs included surveys of departmental staff. The responses suggest room for improvement in both the value placed on research evidence within departments and in the capacity and capability of staff to use evidence (figure 7.1).

In a similar vein, the Victorian Auditor General (VAGO 2015) noted that use of the Victorian Department of Education and Training's Research and Evaluation Register as a tool for sharing information within the Department was limited, inhibiting the Department's ability to learn from its evaluations and improve policy and practices.

Figure 7.1 Use of evidence in Australian education departments<sup>a</sup>



<sup>a</sup> Survey responses from staff in policy, planning and research, evaluation and data analysis functions in education departments in New South Wales (65 staff), Victoria (384 staff) and Queensland (70 staff).

Source: Ferguson and Head (2015).

### Research and evaluation functions

All education departments (and many sector associations) have policy, planning, research, evaluation and data analysis functions. Whether these functions are fit for purpose is an open question.

Research and evaluation functions tend to be lost when agencies downsize. Governments in many jurisdictions have downsized in recent years, suggesting that capacity may have been cut and capability lost. Many of the public officials consulted during the University of Queensland study (within the total sample, not specifically education) noted that changes in the structure, focus and practices of the public service had contributed to a loss of research capacity.

These changes have resulted in a reduced ability to understand and utilise research across departments, and have impacted on the public sector's ability to effectively commission research. (van der Arend 2014, pp. 24–25)

Policy making occurs within political settings, and research findings are only one input into decision making. To some extent, the decision to cut these functions might reflect organisational cultures that place a relatively low value on scientific evidence.

Some developments reflect a stronger focus on research and evaluation within education departments. For example, New South Wales has established (in 2012) the Centre for

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Education Statistics and Evaluation and the Victorian Department of Education and Training has a collaboration with Melbourne Institute researchers (established in 2011).

Overall, the Commission concludes that initiatives to improve the use of evidence in the design of education policy and programs are warranted.

### Evidence use by education providers and their staff

The importance of an evidence-based or evidence-informed approach to teaching practice is reflected in the standards that Australian educators are expected to meet. For example:

- focus area 1.2 of the Australian Professional Standards for Teachers (AITSL 2014a) requires that all teachers draw on research in developing their understanding about how students learn
- focus area 5.4 requires that all teachers can interpret student data
- focus area 6.2 requires that lead teachers engage in research
- according to the Australian Professional Standard for Principals (AITSL 2015a), effective principals use and engage in research
- interrogation of research is one form of evidence that assessors might cite in determining that an Early Childhood Education and Care provider meets element 7.1.4 of the National Quality Standard (ACECQA 2013a).

But there are clear capacity and capability gaps relating to evidence use within education providers and among their staff.

In terms of capacity, generating data, reflecting on its meaning, accessing evidence and determining a course of action on the basis of that information take time. Finding time among the other demands placed upon them is a challenge for educators — a point made, for example, by the Independent Education Union of Australia, Queensland and Northern Territory Branch (sub. 21).

In terms of capability, knowledge and skill gaps among teachers in collecting and using data have been identified as a key issue limiting the effective use of formative assessment in Australia (CESE 2014b; Goss and Hunter 2015). Principals also have concerns. In a 2013 survey, principals rated only 23 per cent of recent primary, and 32 per cent of recent secondary, teacher graduates as either very well or well prepared to make effective use of student assessment information (McKenzie et al. 2014).

Evidence suggests that it might be difficult for teachers to acquire the necessary skills in using data. A review of initial teacher education in Australia, *Action Now: Classroom Ready Teachers*, concluded that:

Providers are not preparing pre-service teachers with the knowledge and skills to use assessment data to inform and improve their teaching practice. (TEMAG 2014, p. xvii)

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The same review also reported concerns that some initial teacher education programs included content that was not evidence informed by evidence.

Some inquiry participants (for example, the Telethon Kids Institute, sub. 15, the Minderoo Foundation, sub. 27, SVA, sub. 59 and APPA, sub. 64) commented on weaknesses in educators' capacity and capability to use evidence (appendix B). The Telethon Kids Institute (sub. 15, p. 16), for example, noted that:

Undergraduate teaching courses for example, do not enable teachers to understand how to interrogate evidence to determine its quality and relevance to their context and the education system has limited embedded analytic capability and financial support to enhance the research capabilities of teachers and other school staff.

Overall, the evidence suggests that the capacity and capability of those training the educators to use data and evidence needs to be strengthened.

The Commission concludes that initiatives to improve the use of evidence by educators to enhance practice are required.

### Evidence use by parents

Parents seek information about education for a number of reasons, but the most important are likely to relate to choosing an education provider, keeping check on their child's performance and trying to determine how best to support their child's learning. The importance of parental engagement in children's education is reflected in its inclusion as one of the four pillars of the Australian Government's plan for an effective education system (DET 2016i).<sup>27</sup>

There is no shortage of evidence available to parents. Education system managers, peak bodies and service providers, for example, provide information through websites, apps, social media and hard copy publications, including books, brochures and posters. Educators also provide information through reports and conversations with parents. The extent to which this information is used and translates into improved student outcomes, however, and the extent to which any underutilisation reflects parents' analytical capacity and capability is unclear.

For some parents, gaps in their own education might mean that finding and interpreting the information they need is difficult. Related to this point, Hattie (2009) noted that some parents cannot speak 'the language of schooling' and that this can be a major barrier to them making a contribution to their children's achievement.

More generally, it might be difficult for parents to identify high-quality information. The Parenting Information Project — a study of the information that parents want and need to

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<sup>27</sup> Henceforth the term parents is used to encompass parents and guardians.

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support them in parenting — concluded that, although there was a lot of information available on parenting:

There are difficulties ... around identifying which information is evidence-based and quality assured, and where to access information. Further investigation is warranted to determine the quality, credibility and usage of the information, programs, websites and videos identified. (DFaCS 2004, p. xi)

Similar comments might be relevant to information about education.

Finally, the effectiveness of teachers and carers as a conduit of information for parents is an area for development. In terms of teachers, the Australian Professional Standards for Teachers (AITSL 2014a) include the focus areas ‘Engage parents/carers in the educative process’, ‘Report on achievement’ and ‘Engage with parents/carers’. However, equipping teachers with the requisite skills to engage with school communities was identified by the Teacher Education Ministerial Advisory Group (2014) as an area for improvement in initial teacher education. In making this finding, among other evidence, the advisory group cited a 2013 survey that found that principals rated only 18 per cent of recent primary teaching graduates and 27 per cent of recent secondary teaching graduates as well or very well prepared to engage parents in the educative process (McKenzie et al. 2014).

The Commission concludes that initiatives to improve parents’ use of evidence to support their engagement in their children’s education are warranted.

## Evidence use by students

Students’ key evidence needs relate to how they are performing. The most useful evidence for students is likely to be feedback on their work that guides them to more effective management of their own learning (CESE 2014b; Hattie 2009) — for example, feedback on how they approached a task or the process they used in working through a problem. This type of evidence is typically provided by educators and is typically informal. It is strongly related to the capacity and capability of educators to collect and use evidence, and it is, therefore, likely that improved evidence use by students requires improved evidence use by educators.

## Improving the use of evidence

Overall, the evidence presented above suggests that efforts to improve the use of evidence by Australian decision makers in the education system are warranted. Similar conclusions have been drawn internationally. It has been realised that, despite efforts to improve the dissemination of information, there are gaps in decision makers’ use of evidence (for example, Finnigan and Daly 2014; Levin et al. 2013).

Concerns that evidence does not sufficiently impact decision making have emerged in many other areas, and have given rise to ‘an exploding field of interest’ (Levin and



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Cooper 2012, p. 17) — knowledge mobilisation, or the translation of evidence into impact on policy and practice.<sup>28</sup>

Generally, knowledge mobilization seems to be about active engagement of diverse public users of research results — engagement that extends beyond ‘traditional’ forms of academic dissemination such as journal articles directed towards academic readers. Outcomes of this engagement should then mobilize the public to become research users, and mobilize impact or visible change among these research users. (Fenwick and Farrell 2012, pp. 2–3)

Other countries appear to have paid more attention to improving knowledge mobilisation. The European Commission, for example, funded projects in 2010–11 and 2011–13 on the links between education research evidence and policy making, and the Evidence Informed Policy and Practice in Education in Europe Network is continuing work on this topic (EIPPEE 2011). In 2014, the UK Government allocated £1 million to the EEF for research into how high-quality evidence is most effectively translated into changes in the classroom (EEF 2014). And in the United States, the Carnegie Foundation and the William T. Grant Foundation, for example, are investing in ways of improving the use of evidence in education settings. More generally, research funders are increasingly interested in research impact. In 2014, for example, the impact of research by UK higher education institutions on the wider community was assessed through the Research Excellence Framework (HEFCE 2016).

In Australia, there is growing research interest in how to mobilise knowledge. As noted above, researchers at the University of Queensland have completed a project about the impact of social science research on policy decision making, including within education (ISSR 2016). Researchers at Monash University have been undertaking a pilot study into the use of evidence in education policy in Victoria (Rickinson 2014). And a process for assessing the impact of research undertaken by Australian higher education institutions is being developed and will be piloted in 2017 (DET 2016j).

But our understanding of what works best in Australia to mobilise knowledge and change decision makers’ behaviour is in its infancy. As Polesel (2013, p. 105) noted in a study of knowledge mobilisation in Australian education research:

The mobilization of knowledge generated by educational research has yet to be coherently conceptualized, and its frameworks, processes and outcomes are rarely investigated.

And as Social Ventures Australia (sub. 59, p. 31) observed:

We need to gather data about the most effective forms of evidence dissemination and engagement with frontline professionals. We need to understand the capability of frontline professionals, individually and collectively, to engage with evidence and effectively implement evidence based approaches. Data and evidence on effectiveness is as important here as it is on educational interventions.

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<sup>28</sup> Terms more commonly used in Australia for knowledge mobilisation include knowledge transfer, knowledge exchange, knowledge utilisation and engaged scholarship (Polesel 2013).

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Better understanding of what works best to improve research impact will likely have widespread implications, for example, for the way researchers communicate their findings, educators are trained and education policy is designed. It will also help ensure that spending on both education and education research is effective and efficient.

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## 8 Governance and institutional arrangements

### Key points

- Appropriate governance and institutional arrangements are essential for the implementation of a framework, focused on evaluation of what works best to improve student outcomes.
- There are many organisations responsible for education-related data collection, data sharing, monitoring and reporting in Australia. None is uniquely responsible and accountable across jurisdictions for evaluation of what works.
- This is a barrier to the implementation of a national education evidence-based framework.
- The Australian, state and territory governments should lead the way by committing to a shared and co-operative approach to policy leadership.
- This commitment should be demonstrated through a new national Education Agreement, which builds on earlier agreements.
- The new Agreement should provide explicit policy directions that define the:
  - objectives
  - nature of the research to be undertaken in the bottom-up evaluation of what works
  - evidentiary standards or frameworks to be applied
  - translation of evidence into guidelines accessible by schools, early childhood education and care services and teachers.
- In the new Education Agreement, institutional arrangements that assign responsibility and accountability for delivery of the functions are necessary.
  - For the top-down monitoring, benchmarking and reporting functions, effective arrangements, conducted by the Australian Curriculum, Assessment and Reporting Authority, are already in place.
- For the implementation of the evaluative research framework, the Australian and state and territory governments should assign an institution to be responsible and accountable.
- The cost of these institutional arrangements is expected to be met from within the existing education budget envelope and funded by all governments.

The framework set out in the preceding chapters for further developing a national education evidence base is not the end of the journey. Effective governance and institutional arrangements are important to create strong incentives for delivery on the goal of improving education outcomes in a cost-effective manner, using a national education evidence-based framework. Effective arrangements are important to support implementation of the framework. They do this by ensuring responsibility for the functions

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and tasks associated with implementing the framework are clearly assigned, thereby promoting accountability.

In Australia's federated system, responsibility for the funding and delivery of education services is spread between the Australian, state and territory governments. In this environment, all governments share responsibility for implementation of both the framework and effective governance and institutional arrangements.

There are many agencies involved in collecting data on early childhood education and care (ECEC) and schools, sharing data, and monitoring and reporting on performance. After briefly reviewing their governance and institutional arrangements (section 8.1), the focus of this chapter is on those institutions that have functions closely related to those set out in the framework for further developing a national education evidence base (chapter 2) — particularly 'top-down' performance monitoring and 'bottom-up' evaluation. Some examples of agencies that undertake evaluation functions both internationally and in Australia are provided as possible models (section 8.2), and a proposed way forward is set out (section 8.3).

## **8.1 Existing governance and institutional arrangements**

The institutional arrangements governing education data reflect the federated and multi-sector nature of Australia's early childhood and school education systems. A range of institutions exist at the national and state levels. Their roles and responsibilities are connected and coordinated through various inter-jurisdictional agreements, protocols and frameworks overseen by the Council of Australian Governments (COAG) and the Education Council (EC).

### **Education Council**

The COAG EC is a Ministerial Council with representation from the Australian Government and all states and territories (New Zealand is a non-decision making member). Each jurisdiction can be represented by a maximum of two ministers with portfolio responsibility for ECEC, school education and/or higher education. Each jurisdiction nominates a Senior Minister as the representative on the Council (COAG 2014).

The EC provides a forum through which strategic policy on ECEC, school education and higher education (including vocational education and training) is coordinated at the national level. It also provides the vehicle through which information is shared, and resources used collaboratively, to address issues of national significance, including development of an evidence base.

The scope of the EC's responsibilities are set out in its terms of reference provided by COAG and summarised in box 8.1.

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### Box 8.1      **Scope of the Education Council's responsibilities**

The Education Council will:

... assist the Council of Australian Governments (COAG) through national collaborative action to improve educational outcomes for all Australians, across all stages of the learning and development lifecycle. COAG Councils are responsible to COAG and will be engaged in work requiring COAG's attention.

By connecting early childhood, school education and higher education, the Council aims to ensure that integrated Australian education systems seamlessly promote high achievement for all students regardless of circumstances.

The Council will further collaborate to develop a research plan, and improve the evidence base, to inform policy development and priorities, and progress greater linkages of data through the life course to better understand education outcomes and productivity for all Australians ...

The Council's work program will include its existing responsibilities under Commonwealth and State legislation, National Agreements, National Partnerships and any other governance arrangements, including national education architecture ...

Additionally, it will ensure performance information is in place to monitor the outcomes and address data gaps.

Source: COAG (2014).

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### The Australian Education Senior Officials Committee (AESOC)

The EC is supported by AESOC (senior officials with responsibility for ECEC, school education and higher education). In turn, AESOC is supported by subgroups, including the Schools Policy Group, the Early Childhood Policy Group, and the Data Strategy Group (DSG). The DSG reports to and provides advice to the AESOC about how data can be improved to inform policy development and priorities, and to progress linkages of data through the life course to better understand education outcomes and productivity for all Australians (Australian Government Department of Education and Training, sub. 68, p. 15).

### The Australian Curriculum, Assessment and Reporting Authority (ACARA)

ACARA is a statutory authority established under the *Australian Curriculum, Assessment and Reporting Authority Act 2008* (Cwlth). ACARA receives directions from the Australian Government, state and territory ministers for education through the EC. The Board has 13 members who are nominated by Australian Government, state and territory education ministers, as well as the National Catholic Education Commission and the Independent Schools Council of Australia.

Under its charter, ACARA is also directed to work closely with Education Services Australia (ESA) and the Australian Institute for Teaching and School Leadership (AITSL) to provide innovative and cost-effective services across all sectors of education.

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ACARA is responsible for the:

- national curriculum from Foundation Year to Year 12 in specified learning areas
- national assessment program aligned to the national curriculum that measures progress of students
- national data collection and reporting program that supports
  - analysis, evaluation, research and resource allocation
  - accountability and reporting on schools and broader national achievement (ACARA 2016a).

Some of the functions specified in ACARA's charter include:

- collection, management and analysis of student assessment data and other data relating to schools and comparative school performance
- facilitation of information sharing arrangements between Australian government bodies in relation to the collection, management and analysis of school data
- publishing information relating to school education, including information relating to comparative school performance
- providing information, resources, support and guidance to the teaching profession (SCSEEC 2012).

In terms of the Commission's framework for further developing the national education evidence base, ACARA facilitates the monitoring, benchmarking and performance reporting (top-down) function.

### The Australian Children's Education and Care Quality Authority (ACECQA)

ACECQA is a statutory authority established under the *Education and Care Services National Law Act 2010* (Cwlth). It oversees the implementation of the National Quality Framework and works with the state and territory regulatory authorities to implement and administer that Framework. Its Board is appointed by and is accountable to the EC, and it reports to the Council through AESOC.

The EC's priorities and expectations for ACECQA are set out in a Letter of Expectation. ACECQA's roles are to:

- implement changes that benefit children from birth to 13 years-of-age and their families
- monitor and promote the consistent application of the Education and Care Services National Law across all states and territories
- support the ECEC sector to improve quality outcomes for children (ACECQA nd).

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## Education Services Australia

ESA is a national, not-for-profit company established under the *Australian Charities and Not-for-profits Commission Act 2012* (Cwlth) owned by all Australian education ministers. The Board of ESA includes representatives of the Australian Government, AESOC, the non-government schools sector, Universities Australia and a range of independent experts. The priorities for the company are outlined in a Letter of Expectation from the EC.

The role of ESA is to:

- advance key nationally-agreed education initiatives, programs and projects by providing services such as:
  - researching, testing and developing effective and innovative technologies and communication systems for use in education
  - devising, developing and delivering curriculum and assessment, professional development, career and information support services, consistent with the work of ACARA, AITSL, states and territories and other key stakeholders
  - facilitating the pooling, sharing and distribution of knowledge, resources and services to support and promote e-learning, across jurisdictions, sectors and internationally
  - supporting national infrastructure to ensure access to quality assured systems and content and interoperability between individuals, entities and systems
- create, publish, disseminate and market curriculum and assessment materials, ICT-based solutions, products and services to support learning, teaching, leadership and administration (Education Services Australia 2015).

## Other key bodies

### The Australian Institute for Teaching and School Leadership

AITSL is a non-profit company established under the *Corporations Act 2001* (Cwlth) and funded by the Australian Government. The Australian Government Minister for Education and Training is the sole member of the company. AITSL operates under its own constitution, with decisions taken by an independent board of directors, who are appointed by the Minister. The Board includes representatives of government, universities, non-government schools, school principals and other experts. Board members have diverse professional expertise in educational practice and research.

AITSL provides national leadership for the Australian, state and territory governments in promoting excellence in the profession of teaching and school leadership. Particular areas of focus include initial teacher education, school leadership and teacher professional development.

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AITSL's Statement of Intent identifies three ways of working within its areas of focus (initial teacher education, school leadership and teaching).

- Developing national policies and high-quality tools and resources to support improvement in teaching and school leadership, and consequently student learning. Work will focus on areas most likely to have a sustained national impact.
- Working in partnership with schools, higher education providers, systems, sectors and other organisations to develop, disseminate and embed AITSL's work, and to create a scalable impact.
- Developing a research plan, commissioning and conducting research on issues relating to its mission and encouraging other researchers and organisations to add to the evidence base, as efforts to improve teaching and school leadership must derive from a credible evidence base (AITSL 2015c).

AITSL would appear to be the agency undertaking some of the functions outlined in chapter 7 regarding the evaluation of what works. However, unlike ACARA (which performs the top-down monitoring role), AITSL does not operate under the umbrella of COAG and the EC, although it does work closely with the EC and its reporting organisations.

### Other Australian, state and territory government departments and agencies

The Australian, state and territory governments establish departments to provide policy, funding, and administrative and reporting oversight of early childhood and school education systems, within their respective areas of responsibility. Some of these departments include dedicated units with reporting and data analysis roles, such as the New South Wales Centre for Education Statistics and Evaluation.

State and territory governments also have authorities (generally known as ACACA agencies), whose responsibilities include curriculum development and senior secondary assessment and certification.

### Non-government schools and early childhood education provider representation

Non-government (Catholic and Independent) schools and ECEC providers are represented nationally through groups such as the National Catholic Education Commission (with a range of state and territory affiliates and diocesan offices) and the Independent Schools Council of Australia (although this is a representative organisation rather than a formal structure). The non-government education sector is also represented in the advisory structures of institutions such as ACARA and the DSG.



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## A gap in the existing institutional arrangements

The existing institutional arrangements focus on top-down aspects of the evidence base — monitoring, benchmarking and performance reporting. Most education data in Australia are collected for performance monitoring purposes (chapter 3) and there is a gap in evidence relating to what works best to improve education outcomes (chapters 3 and 7) — that is, evidence generated primarily through a bottom-up approach. This gap is also apparent in current institutional arrangements. ACARA, for example, focuses on reporting (for monitoring purposes) at the national, state and territory level through the *National Report on Schooling* and at the school level through My School. Although data are made available by governments and institutions in various ways for research purposes, co-operative and coordinated support across jurisdictions for development of the bottom-up evidence base is not substantially reflected in the current institutional architecture.

The Australian, state and territory governments have recognised that a new architecture might be beneficial. Work towards new national governance and institutional arrangements for school education was set in train through the COAG National Education Reform Agreement (NERA) (COAG 2013).

Section 44 of the NERA committed to a review of the most efficient and effective arrangements to support the reforms outlined in the Agreement. (Reform directions of particular relevance to this inquiry are summarised in box 8.2.)

Since 2013, five jurisdictions (New South Wales, Victoria, South Australia, Tasmania and the ACT) have operated under the NERA. Queensland, Western Australia and the Northern Territory continue to operate under the earlier National Education Agreement (DPMC 2016). As far as the Commission has been able to ascertain, there has been no official progress on the relevant aspects of the National Plan for School Improvement and the establishment of the Australian School Performance entity.

In 2013, the EC's predecessor, the Standing Council on School Education and Early Childhood (SCSEEC) asked senior officials<sup>29</sup> to refine the terms of reference for a Review of the National Architecture (SCSEEC 2013). A review of the national architecture to support SCSEEC reforms was undertaken by the Nous Group in 2013. This report has not been published and its status is unclear.

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<sup>29</sup> The Australian Education, Early Childhood Development and Youth Affairs Senior Officials Committee, the predecessor of the AESOC

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## Box 8.2      **National Education Reform Agreement (2013)**

### *PART 3 — ROLES AND RESPONSIBILITIES*

#### Shared Responsibilities of the Commonwealth and the States and Territories

- 29. The Commonwealth and the States and Territories will:
  - (h) work together to develop, publish and disseminate evidence on what works best in schools to support the achievement of the agreed national objective and outcomes, including by:
    - ... researching, sharing and evaluating improvement and innovation strategies;
    - ... taking account of national and international trends associated with school performance and education outcomes; and
    - ... examining the impact and effectiveness of Australian school education across policy and strategy, program effectiveness and practice, and implementation in school settings.

### *PART 4 — NATIONAL PLAN FOR SCHOOL IMPROVEMENT*

#### Reform Directions

- 44. The Parties agree that SCSEEC will undertake a review to identify the most efficient and effective governance and institutional arrangements to deliver the reforms outlined in this Agreement. This review will be finalised by 31 July 2013. This review will encompass the independent process at provision 56a.
- 56. The Parties agree to the following new signature reforms:
  - (a) establish an Australian School Performance entity; following an independent process (to be completed by 31 May 2013) to:
    - ... identify the roles, functions and governance to enable the entity to support school improvement and enhance national data, accountability, analysis and research capability;
    - ... consider the appropriate institutional arrangements, including consideration of the capacity of existing education agencies to deliver the recommended functions; and
    - ... consider the most cost-efficient and effective delivery of the recommended functions in a way which avoids duplication of existing agencies.
  - (b) build the evidence base through a national research plan;
    - ... develop a national research plan to ensure performance data is analysed and policy evaluated, which will be appended to this Agreement as Schedule F once agreed by SCSEEC; and
    - ... improve the dissemination of research and data analysis to inform policy development.

Source: COAG (2013).

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## 8.2 Examples of governance and institutional arrangements for ‘bottom-up’ evidence creation

Examples of institutions that undertake the functions relating to the creation and dissemination of evidence through bottom-up approaches outlined in chapters 2 and 7 include the UK Education Endowment Foundation (EEF), the US Institute of Education Sciences (IES), the NZ Iterative Best Evidence Synthesis (BES) program and Social Ventures Australia (SVA).

### Education Endowment Foundation (UK)

The EEF provides a model of an institution run at arm’s length from government. The EEF was established in 2011 through charities legislation in the United Kingdom. It was created in response to the UK Government’s policy to enhance education outcomes for disadvantaged children. The UK Government called for tenders to run the EEF and provided an endowment (a founding grant of £125 million), which, with investment and fundraising income intends to award as much as £200 million over the 15-year life span of the Foundation.

The EEF is an independent charity and its Board of Trustees — four of whom are nominated by the successful tenderer Sutton Trust and three by Impetus Trust<sup>30</sup> — have discretion as to how the organisation meets its charitable objects. The EEF has an 11 member advisory board, drawn from education, public policy and business to provide insight and advice to the trustees and the executive team. The EEF’s approach of separating research and review processes (chapter 7) provides a rigour that is not necessarily achieved by research organisations undertaking a project alone (notwithstanding the quality of the work).

The EEF’s total grant expenditure was approximately £12 million in 2014-15 (EEF 2015a). Costs (including direct costs, support costs and governance costs, but excluding costs of generating funds) were approximately £1.2 million (EEF 2015c). The EEF:

- aims to raise the attainment of children facing disadvantage by identifying and funding promising educational innovations that address the needs of disadvantaged children in schools
- shares and promotes the use of evidence in schools by providing independent and accessible information through the Sutton Trust-EEF Teaching and Learning Toolkit and the Early Years Toolkit summarising educational research from the United Kingdom and around the world
- provides a resource for school leaders and policy makers to inform decision making in schools (EEF 2016c).

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<sup>30</sup> A philanthropic organisation now known as Impetus PEF – following the merger of Impetus Trust (founded in 2002) and the Private Equity Foundation (founded in 2006).

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In March 2013, the EEF and the Sutton Trust were jointly designated by the UK Government as a What Works Centre for improving education outcomes for school-aged children. It is now one of seven What Works Centres in the United Kingdom. The network of What Works Centres help to ensure that thorough, high-quality, independently assessed evidence shapes decision making at every level, by:

- collating existing evidence on the effectiveness of policy programs and practices
- producing high-quality synthesis reports and systematic reviews in areas where they do not currently exist
- assessing how effective current policies and practices are against an agreed set of objectives
- sharing findings in an accessible way
- encouraging practitioners, commissioners and policy makers to use these findings to inform their decisions (UK Government 2015).

## **US Institute of Education Sciences**

The IES provides a model of an institution run from within government. The IES is the research arm of the US Department of Education. Some of its key characteristics are its independence from government, technical expertise, and central roles in supporting policy-relevant research and evaluation and dissemination.

The operations of the IES are overseen by the Director and a technical board (Kuenzi and Stoll 2014). The Director of the IES (who has expertise in education research, statistics or evaluation) is appointed by the President, with consent from the Senate. The Director's duties include proposing research priorities, establishing procedures for technical and peer review and ensuring the independence of the Institute.

The National Board of Education Sciences (a technical panel composed primarily of researchers) has a number of responsibilities, including advising the Director on the policies of the IES and grant applications, and approving research priorities and procedures for review. The Board also assesses the progress of the IES and makes recommendations for improvement.

The IES covers education from ECEC to post-secondary study. It is authorised to:

- award grants to support technical assistance and evaluation (including training to implement programs and dissemination activities) and grants to develop statewide longitudinal data systems
- conduct the National Assessment of Educational Progress — a National Assessment Governing Board formulates assessment policy guidelines (Kuenzi and Stoll 2014).

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The IES consists of four research centres, each with different purposes, including both top-down and bottom-up functions (Kuenzi and Stoll 2014).

- The National Center for Education Research sponsors research (including maintaining peer review processes and research standards of all research conducted by the Centre) proposes and implements scientifically valid research plans, ensuring that research is relevant to education practice and policy, and synthesises and disseminates research findings.
- The National Center for Education Statistics collects, compiles and disseminates statistics on the status and progress of education at all levels, including data on student achievement, reform activities and teaching practice.
- The National Center for Education Evaluation and Regional Assistance evaluates education programs to determine their impact; synthesises and disseminates results of evaluation, research and products developed; and encourages the use of scientifically valid education research and evaluation. It carries out these roles by providing technical assistance and awarding grants, contracts and co-operative agreements. (The What Works Clearinghouse discussed in chapter 7 is part of this research centre.)
- The National Center for Special Education Research sponsors research on the needs of infants, toddlers and children with disabilities to improve their outcomes, and to evaluate and improve services to these groups.

Each research centre is headed by a Commissioner appointed by the Director, except for the National Center for Education Statistics, whose Commissioner is appointed by the President (Kuenzi and Stoll 2014).

## **The NZ Iterative Best Evidence Synthesis (BES) program**

The BES Programme provides another example of an institution run from within government. The BES Programme carries out its role from within the NZ Ministry of Education.

The BES model requires broad collaboration with stakeholders but retains independence to facilitate evidence sharing in a way that informs education policy and practice (NZ Government 2016).

The BES approach draws upon the expertise and engagement of policy, research and practice communities in education to develop and use evidence that explain what works and why, with careful attention to context (OECD 2007). This evidence is communicated to teaching professions using vignettes and case studies; the first BES was released in 2003. BESs are intended to be a catalyst for systemic improvement in education outcomes.

The BES brings together a range of stakeholders within the education sector. Given Australia's federated system, a similar organisation located within an Australian Government department would not provide an appropriate structure.

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## Social Ventures Australia

SVA is a non-profit organisation focusing on overcoming disadvantage.

SVA has initiated its Evidence for Learning program, by providing funding, capability building and access to networks. The program is supported by founding partners (the UK EEF and the Commonwealth Bank of Australia).

The program provides:

- a Teaching and Learning Toolkit (a free online summary of global educational research on approaches to lift learning outcomes in schools). The toolkit is delivered at a cost of less than \$1 million per annum (SVA, sub. 59, p. 39)
- a Learning Impact Fund, under which SVA pairs programs in schools with experienced independent evaluators to conduct rigorous research to assess the impact of the program on learning (SVA, sub. 59, p. 11). To date, the Learning Impact Fund has a pool of \$4 million (SVA, sub. 59, p. 48).

The Evidence for Learning program is supported by:

- a Steering Group (which has representatives from the founding partner organisations)
- an Expert Reference Council, which comprises members from across the sector, including government and non-government organisations
- a Research Use and Evaluation Committee, to provide technical expertise in the fields of school evidence and research (Evidence for Learning 2016).

## 8.3 The way forward

To support the further development of the national education evidence base, two key steps are required to create the governance and institutional arrangements. These are a new national Education Agreement which defines the framework for evaluating the policies, programs and teaching practices that work best and assigning an institution to be responsible and accountable for implementing the framework. These are elaborated below.

For the top-down monitoring, benchmarking and reporting functions, effective arrangements, conducted by ACARA, are already in place and could be expanded to include the ECEC sector.

### The Australian, state and territory governments should lead the way

The Australian, state and territory governments should take a shared and co-operative approach to policy leadership to get the greatest benefits possible from implementation of the framework for a national education evidence base, particularly focusing on the

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evaluation of what works. All governments should agree to drive the implementation of the framework.

### A new Education Agreement is needed

Governments commitment to implementation of the framework should be demonstrated through a new Education Agreement, that builds on earlier agreements. Unlike previous agreements that have focused either on schools or early childhood, this Education Agreement should relate to both school and early childhood education. Through a new agreement, the Australian, state and territory governments should provide explicit policy directions that define the:

- objectives
- nature of the research to be undertaken in the bottom-up evaluation of what works
- evidentiary standards or frameworks to be applied
- translation of evidence into guidelines accessible by schools, ECEC services and teachers

To create strong incentives for delivery on the new functions to be included in the agreement, an institution should be established that is responsible and accountable for implementation. It also enables parties to the education system, including non-government education providers and the research community, to participate. Working under the EC structure enables existing shared responsibilities and accountabilities by the Australian and state and territory governments to be leveraged and strengthened.

The Australian, state and territory governments through the new Education Agreement (using the principles of good governance in box 8.3) should request the EC to:

- assign an institution to be responsible and accountable for implementation of the what works best framework
- specify the assigned institution's governance arrangements, functions and operations, including that the institution have responsibility for promoting a culture among policy makers and educators to apply the evidence base.

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### Box 8.3 Principles of good governance

#### *Accountability and responsibility*

Accountability is achieved when decision makers are assigned functions, held responsible for their decisions and actions and submit themselves to external scrutiny. It is important that all parties have clearly defined roles and a clear understanding of their responsibilities.

Governments can contribute to improved accountability by:

- setting clear policy objectives
- providing policy guidelines and clearly defining the functions of the agency or entity responsible for delivering on the bottom-up approach.

#### *Transparency*

Transparency is required so that the community can determine whether they have confidence in the decisions and actions taken by governments and public sector agencies in relation to the national education evidence framework. Transparency has been an important element of recent reforms in education, including the Smarter Schools National Partnerships, National Curriculum, National Assessment Program — Literacy and Numeracy, and My School.

#### *Capability*

Government entities require appropriate resourcing and capability to carry out their functions effectively (this includes financial resources and suitably skilled staff).

#### DRAFT RECOMMENDATION 8.1

The Australian, state and territory governments should task the COAG Education Council to provide explicit policy direction through a new Education Agreement, which would build on prior agreements and define the:

- objectives
- nature of the research to be undertaken in the bottom-up evaluation of what works
- evidentiary standards or frameworks to be applied, including assessment of cost effectiveness
- requirement for translation of evidence into guidelines accessible by schools, early childhood education and care services and teachers.

They should also request the Education Council to:

- assign an institution to be responsible and accountable for implementation of the functions set out above and in Draft Recommendation 7.2
- specify the assigned institution's governance arrangements, functions and operations
  - including a responsibility for promoting a culture of using the evidence base by policy makers and educators.



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## Proposed institutional design and functions

The suggested governance arrangements and functions for this institution draw on those observed internationally, including the UK EEF and the US IES (section 8.2). The proposed governance arrangements include that:

- the institution would
  - be accountable to, but operate at arm's length from, the EC (all education ministers)
  - be an independent statutory authority or company (or contained within one)
  - have an independent board, with board members appointed by the EC through a transparent selection process
  - enable direct involvement by non-government schools and ECEC services
- the EC would have veto power in the selection of research projects, but would use this transparently.

The institution would be responsible for the following functions:

- selection and funding of research proposals, through competitive tendering
- commissioning independent reviews of research findings
- ensuring required standards of evidence are maintained in commissioned research
- translating research findings into guidelines and sharing them with schools, ECEC services, teachers and policy makers
- supporting knowledge mobilisation and encouraging teaching professionals, schools, teacher training institutions and policy makers to use the evidence to inform their decisions
- keeping researchers informed about potentially useful administrative and other datasets, including through provision of a metadata repository.

The institution would operate with open and transparent processes, including by:

- publishing its work
- consulting on research priorities and methods of operation
- releasing data from evaluations, for secondary analysis by other researchers.

The Australian, state and territory governments would collectively resource the institution and apply principles of good governance (box 8.3) in establishing and overseeing the institution.

The institution would not do research or evaluation on its own account. It would run a competitive process to award grants to others who put forward proposals that pass guidelines. Research proposals could come from diverse sources, such as schools, ECEC services, research institutes, local governments, community and charitable organisations.

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The institution would also contract others to do independent and rigorous reviews of the research.

These institutional arrangements could leverage the work of other research institutions (such as university institutes and SVA).

The Commission has identified three broad options as to where the institution might be ‘housed’:

- incorporating it into an existing institution, such as AITSL or ACARA
- creating a separate government owned institution
- creating a new, privately run institution through a competitive tender process, similar to the way in which the UK EEF was established.

Each of these options is likely to have strengths and weaknesses. Some key considerations in assessing these options include the level of independence from governments and their departments (including the potential for ‘de-politicising’ the evaluation process), the scope for operational efficiencies, and the capacity to leverage funding by other research institutions.

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*INFORMATION REQUEST 8.1*

*The Commission seeks further information about the strengths and weaknesses of its proposed institutional and governance arrangements.*

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## A Public consultation

In keeping with its standard practice, the Commission has actively encouraged public participation in this study.

- Following receipt of the terms of reference on 11 March 2016, an advertisement was placed in major Australian newspapers and a circular was sent to identified interested parties.
- An issues paper was released on 11 April 2016 to assist those wishing to make a written submission. A total of 80 submissions were subsequently received (table A.1). These submissions are available online at <http://www.pc.gov.au/inquiries/current/education-evidence/submissions>.
- As detailed in table A.2, consultations were held with representatives from the Australian, and state and territory government departments and agencies, academics and peak bodies, in each of the sectors covered in this study.

The Commission thanks all parties who have contributed to this study and now seeks additional input for its final report. The Commission welcomes further submissions to discuss the substance of the draft report, including responses to the information requests and draft recommendations.

**Table A.1 Submissions<sup>a</sup>**

<i>Individual or organisation</i>	<i>Submission number</i>
Anviah, Wilma	80
Association of Heads of Independent Schools of Australia (AHISA)	50
Australian Academy of Science	67
Australian Association of Special Education (AASE)	30
Australian Association for Research in Education (AARE)	22
Australian Bureau of Statistics (ABS)	78
Australian Childcare Alliance New South Wales (ACA NSW)	28
Australian Children's Education and Care Quality Authority (ACECQA)	11
Australian Council for Educational Research (ACER)	32
Australian Curriculum, Assessment and Reporting Authority (ACARA)	62
Australian Government Department of Education and Training (DET)	68
Australian Housing and Urban Research Institute (AHURI)	74
Australian Institute of Health and Welfare (AIHW)	55
Australian Institute for Teaching and School Leadership (AITSL)	5
Australian Library and Information Association (ALIA)	43
Australian Primary Principals Association (APPA)	64
Australian Research Council Centre of Excellence for Children and Families over the Life Course (Life Course Centre), University of Queensland	9
Biddle, Dr Nicholas and Breunig, Prof Robert	25
Brooks, Prof Fiona and Redmond, Assoc Prof Gerry	38
Catholic Education Diocese of Parramatta (CEDP)	23
Catholic Education Melbourne (CEM)	72
Centre for Research in Early Childhood Group (CREC), Edith Cowan University	53
Children and Young People with Disability Australia (CYDA)	66
City of Boroondara	20
Commissioner for Children and Young People Western Australia (CCYP WA)	40
Community Child Care Association (CCC)	58
Community Child Care Co-operative New South Wales (CCCC NSW)	51
de Lemos, Dr Molly; Neilson, Dr Roslyn; Wheldall, Prof Kevin; and Wheldall, Dr Robyn	6
Early Childhood Australia (ECA)	71
Early Start, University of Wollongong	26
Essential Education Economics (E3) and School Efficiency Metrics Australasia (SEMETRICA)	17
Edwards, Assoc Prof Ben and Sipthorp, Mark	73
Family Day Care Australia (FDCA)	63
Federation of Ethnic Communities' Councils of Australia (FECCA)	29
Fraser Mustard Centre	52
Glover, John	3
Gold Coast Dyslexia Support Group	56
Goodstart Early Learning	70
Grattan Institute	61
Hempenstall, Dr Kerry	1 #

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**Table A.1** (continued)

<i>Individual or organisation</i>	<i>Submission number</i>
Independent Education Union of Australia (IEUA)	18
Independent Education Union of Australia – Queensland and Northern Territory Branch (IEUA-QNT)	21
Independent Schools Council of Australia (ISCA)	39
Lawry, Chiara and Lux-Lee, Sarah	46 #
Learning Sciences Institute Australia (LSIA), Australian Catholic University	48
Manickam, Julia	7
Mathers, Tamsin	8
Melbourne Graduate School of Education, The University of Melbourne (MGSE)	54
Meyer, Yvonne	34
Miller, Trish	12
Minderoo Foundation	27
Mitchell Institute, Victoria University	31
Murdoch Childrens Research Institute (MCRI), The Royal Children's Hospital Melbourne	47 #
National Catholic Education Commission (NCEC)	49
National Centre for Student Equity in Higher Education (NCSEHE), Curtin University	13
National Centre for Vocational Education Research (NCVER)	65
National Congress of Australia's First Peoples	44
New South Wales Government (NSW Government)	79
Northern Territory Government (NT Government)	77
Northside Community Service	16
Office of the Australian Information Commissioner (OAIC)	69
Population Health Research Network (PHRN)	24
Principals Australia Institute (PAI)	36
Queensland University of Technology (QUT) Faculty of Education	19
Research Institute for Professional Practice, Learning and Education (RIPPLE), Charles Sturt University	45
SA NT DataLink	57
School Curriculum and Standards Authority, Western Australia (SCSA WA)	14
School of Education and Professional Studies, Griffith University	76
Snow, Pamela	4
Social Ventures Australia (SVA)	59
Specific Learning Difficulties Association New South Wales (SPELD NSW)	37
Speech Pathology Australia	35
Stanley, Fiona	41 #
Tasmanian Government	75
Telethon Kids Institute	15
The Smith Family	60
The University of Western Australia (UWA) Faculty of Education	10
Tidswell, Sandra	2
United Voice	42
University of Tasmania (UTAS) Faculty of Education	33

<sup>a</sup> A hash (#) indicates that the submission includes attachments.

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**Table A.2      Consultations**

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*Individual or organisation*

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**NEW SOUTH WALES**

Australian Children's Education and Care Quality Authority (ACECQA)  
Australian Council of State School Organisations (ACSSO)  
Australian Curriculum, Assessment and Reporting Authority (ACARA)  
Education Council's Data Strategy Group (DSG)  
NSW Centre for Education Statistics and Evaluation (CESE)  
NSW Department of Education  
NSW Department of Premier and Cabinet  
NSW Treasury  
United Voice

**VICTORIA**

Australian Council for Educational Research (ACER)  
Australian Institute of Family Studies (AIFS)  
Australian Institute for Teaching and School Leadership (AITSL)  
Autism Spectrum Australia (Aspect)  
Centre for International Research on Education Systems (CIRES)  
Chief Executive Officers from the Australasian Curriculum, Assessment and Certification Authorities  
Early Childhood Australia (ECA)  
Education Endowment Foundation (EEF)  
Fowler, Dr Craig (Managing Director, National Centre for Vocational Education Research)  
Melbourne Graduate School of Education (MGSE)  
Mitchell Institute  
National Catholic Education Commission (NCEC)  
National Independent Special Schools Association (NISSA)  
National Schools Interoperability Program (NSIP)  
Social Ventures Australia (SVA)  
VIC Department of Education and Training

**QUEENSLAND**

Independent Schools Queensland  
QLD Department of Premier and Cabinet  
QLD Department of Education and Training  
QLD Treasury

**SOUTH AUSTRALIA**

Catholic Education South Australia  
National Centre for Vocational Education Research (NCVER)  
SA NT DataLink  
SA Department of Premier and Cabinet  
SA Department for Education and Child Development

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**Table A.2** (continued)

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*Individual or organisation*

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**WESTERN AUSTRALIA**

Population Health Research Network (PHRN)  
Preen, Professor David (Chair in Public Health, The University of Western Australia)  
Telethon Kids Institute  
WA Department of Education  
WA Commissioner for Children and Young People  
WA Department of Local Government and Communities (Early Childhood)

**TASMANIA**

Blacklow, Dr Paul, University of Tasmania  
Tasmanian Catholic Education Office (TCEO)  
TAS Department of Education  
TAS Department of Premier and Cabinet

**NORTHERN TERRITORY**

Association of Independent Schools Northern Territory  
Catholic Education Office Northern Territory  
Menzies School of Health Research, Charles Darwin University  
NT Department of Education  
NT Department of the Chief Minister

**AUSTRALIAN CAPITAL TERRITORY**

ACT Department of Education  
Association of Heads of Independent Schools of Australia (AHISA)  
Australian Bureau of Statistics (ABS)  
Australian Government Department of Education and Training (DET)  
Australian Government Department of Education and Training (Secretary's Office)  
Australian Government Department of Health  
Australian Institute of Health and Welfare (AIHW)  
Australian Primary Principals Association (APPA)  
Australian Treasury  
Independent Schools Council of Australia (ISCA)  
Office of Minister for Education

**Video/teleconference**

ACT Department of Education  
Children and Young People with Disability Australia (CYDA)  
Federation of Parents and Friends Associations of Catholic Schools in Queensland  
Jones, Craig (Director, NSW Centre for Education Statistics and Evaluation)  
Matheson, Peter and Randall, Rob (Australian Curriculum, Assessment and Reporting Authority)  
Queensland Catholic Education Commission (QCEC)  
SA Department for Education and Child Development  
VIC Department of Education and Training  
WA Department of Education

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## B Data quality issues, and data and evidence gaps: stakeholder summary

This appendix compiles the education data quality issues (table B.1), data gaps (table B.2), evidence gaps (table B.3) and evidence creation and use gaps (table B.4) as put to the Commission during its consultation process.

Data quality issues in table B.1 are categorised using the characteristics that education data ideally have as outlined in chapter 2, box 2.3. These include:

- relevance — the extent to which the data meet user needs in terms of the concept(s) measured and population(s) represented. This includes the scope and coverage of the data, classifications and statistical standards used and whether the dataset incorporates all relevant items of interest
- timeliness — the length of time between the period to which the data pertain and when the data are released, and the frequency of data collection
- accuracy — the extent to which the data correctly describe what they were designed to measure
- coherence — the internal consistency of the data, as well as its comparability with other sources of information. Coherence is promoted by the use of standard concepts, classifications, populations and methods of collection.

**Table B.1 Education data quality issues<sup>a</sup>**

Topic	Quality issue <sup>b</sup>	Submission	
Early childhood education and care data			
Specific collections			
National Early Childhood Education and Care Collection	Relevance	ISCA (sub. 39)	
	Coherence	DET (sub. 68)	Mitchell Institute (sub. 31)
		CCCC NSW (sub. 51)	ISCA (sub. 39)
		ECA (sub. 71)	
Australian Early Development Census	Timeliness	DET (sub. 68)	City of Boroondara (sub. 20)
		Life Course Centre (sub. 9)	
Child data			
Outcomes	Coherence	DET (sub. 68)	Speech Pathology of Australia (sub. 35)
		MGSE (sub. 54)	
Attendance and enrolment	Relevance	ECA (sub. 71)	Mitchell Institute (sub. 31)
		Goodstart Early Learning (sub. 70)	United Voice (sub. 42)
	Timeliness	Mitchell Institute (sub. 31)	
	Coherence	AIHW (sub. 55)	Mitchell Institute (sub. 31)
		ECA (sub. 71)	
Non-specific (general statements about data quality in the sector)	Relevance	DET (sub. 68)	Mitchell Institute (sub. 31)
		MGSE (sub. 54)	QUT Faculty of Education (sub. 19)
		Minderoo Foundation (sub. 27)	
	Timeliness	DET (sub. 68)	Minderoo Foundation (sub. 27)
		City of Boroondara (sub. 20)	Mitchell Institute (sub. 31)
		ECA (sub. 71)	QUT Faculty of Education (sub. 19)
		Early Start, University of Wollongong (sub. 26)	Telethon Kids Institute (sub. 15)
		FDCA (sub. 63)	
		SCSA WA (sub. 14)	Telethon Kids Institute (sub. 15)
	Coherence	ABS (sub. 78)	Mitchell Institute (sub. 31)
		ACA NSW (sub. 28)	NSW Government (sub. 79)
		DET (sub. 68)	QUT Faculty of Education (sub. 19)
		AIHW (sub. 55)	RIPPLE (sub. 45)
		ALIA (sub. 43)	SCSA WA (sub. 14)
		Life Course Centre (sub. 9)	Tasmanian Government (sub. 75)
		CREC (sub. 53)	Telethon Kids Institute (sub. 15)
ECA (sub. 71)		United Voice (sub. 42)	
FDCA (sub. 63)			
School education data			
Specific collections			
National School Statistics Collection	Relevance	AIHW (sub. 55)	
Nationally Consistent Collection of Data on School Students with Disability	Relevance	CYDA (sub. 66)	Speech Pathology Australia (sub. 35)
	Accuracy	CEM (sub. 72)	CYDA (sub. 66)
	Coherence	DET (sub. 68)	CYDA (sub. 66)
		CEM (sub. 72)	NCEC (sub. 49)

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Table B.1 (continued)

Topic	Quality issue <sup>b</sup>	Submission	
Student data			
Student outcomes and behaviour	Relevance	Australian Academy of Science (sub. 67)	
	Coherence	Australian Academy of Science (sub. 67) DET (sub. 68)	QUT Faculty of Education (sub. 19) UWA Faculty of Education (sub. 10)
Attendance and enrolment	Relevance	ACARA (sub. 62) DET (sub. 68)	Life Course Centre (sub. 9) CCYP WA (sub. 40)
	Coherence	DET (sub. 68) AIHW (sub. 55)	The Smith Family (sub. 60)
Disability	Relevance	SCSA WA (sub. 14)	Speech Pathology Australia (sub. 35)
	Coherence	CYDA (sub. 66) NCEC (sub. 49)	Speech Pathology Australia (sub. 35)
Marginalised groups	Relevance	DET (sub. 68)	The Smith Family (sub. 60)
	Accuracy	NT Government (sub. 77)	Tasmanian Government (sub. 75)
Non-specific (general statements about data quality in the sector)	Relevance	NCEC (sub. 49)	
	Timeliness	IEUA-QNT (sub. 21)	NCEC (sub. 49)
	Coherence	AHISA (sub. 50)	CREC (sub. 53)
		ABS (sub. 78)	NCEC (sub. 49)
		DET (sub. 68) APPA (sub. 64)	NSW Government (sub. 79) NT Government (sub. 77)
Workforce data			
Specific collections			
National ECEC Workforce Census	Relevance	ECA (sub. 71)	
Non-specific			
ECEC workforce data	Relevance	ECA (sub. 71) Mitchell Institute (sub. 31)	QUT Faculty of Education (sub. 19)
	Timeliness	DET (sub. 68)	QUT Faculty of Education (sub. 19)
	Accuracy	QUT Faculty of Education (sub. 19)	
Teacher data	Relevance	DET (sub. 68) AITSL (sub. 4) Mitchell Institute (sub. 31)	Grattan Institute (sub. 61) QUT Faculty of Education (sub. 19) Speech Pathology Australia (sub. 35)
		Timeliness	Mitchell Institute (sub. 31)
		Coherence	DET (sub. 68) AITSL (sub. 4)

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Table B.1 (continued)

Topic	Quality issue <sup>b</sup>	Submission	
Data on external influences			
Parent-reported data	Relevance	Grattan Institute (sub. 61) ISCA (sub. 39)	Mitchell Institute (sub. 31)
	Accuracy	AHISA (sub. 50) Grattan Institute (sub. 61)	NCEC (sub. 49) ISCA (sub. 39)
	Coherence	Life Course Centre (sub. 9) Mitchell Institute (sub. 31)	UWA Faculty of Education (sub. 10)
Longitudinal data			
Longitudinal studies <sup>c</sup>	Relevance	ACECQA (sub. 11) Life Course Centre (sub. 9) CREC (sub. 53) CCC (sub. 58) ECA (sub. 71) Edwards and Sipthorp (sub. 73) FDCA (sub. 63)	Goodstart Early Learning (sub. 70) Mitchell Institute (sub. 31) NCVER (sub. 65) QUT Faculty of Education (sub. 19) RIPPLE (sub. 45) United Voice (sub. 42)

<sup>a</sup> Data access, reporting and linkage issues are not considered in this table. <sup>b</sup> Relevance refers to issues of comprehensiveness and granularity, timeliness to issues of frequency of collection and data release, and coherence to issues of consistency and comparability. <sup>c</sup> Includes the Longitudinal Study of Australian Children, Longitudinal Study of Indigenous Children and the Longitudinal Survey of Australian Youth.

**Table B.2 Education data gaps<sup>a</sup>**

<i>Topic</i>	<i>Submission</i>	
<b>Early learning<sup>b</sup></b>		
<b>Early learning outcomes</b>		
<i>Cognitive</i>	City of Boroondara (sub. 20) Early Start, University of Wollongong (sub. 26)	MGSE (sub. 54) Speech Pathology Australia (sub. 35)
<i>Non-cognitive</i>	Early Start, University of Wollongong (sub. 26) Goodstart Early Learning (sub. 70) MGSE (sub. 54)	Minderoo Foundation (sub. 27) Northside Community Service (sub. 16) QUT Faculty of Education (sub. 19) Speech Pathology Australia (sub. 35)
<b>Students with disability</b>	CYDA (sub. 66) SPELD NSW (sub. 37)	Speech Pathology Australia (sub. 35)
<b>Marginalised groups<sup>c</sup></b>	Early Start, University of Wollongong (sub. 26) FECCA (sub. 29)	Goodstart Early Learning (sub. 70) Northside Community Service (sub. 16)
<b>Other</b>	AIHW (sub. 55) Life Course Centre (sub. 9) ECA (sub. 71)	QUT Faculty of Education (sub. 19) UWA Faculty of Education (sub. 10)
<b>School education</b>		
<b>Student outcomes</b>		
<i>Early assessment</i>	AASE (sub. 30) ACER (sub. 32) ACARA (sub. 62) de Lemos et al. (sub. 6)	Hempenstall (sub. 1) Meyer (sub. 34) Speech Pathology Australia (sub. 35)
<i>Non-cognitive capabilities, 21st century skills and wellbeing</i>	ACA NSW (sub. 28) ACECQA (sub. 11) ACER (sub. 32) ACARA (sub. 62) DET (sub. 68) AIHW (sub. 55) Life Course Centre (sub. 9) Brooks and Redmond (sub. 38) CEDP (sub. 23) CEM (sub. 72) CREC (sub. 53) CCYP WA (sub. 40) CCC (sub. 58) City of Boroondara (sub. 20) ECA (sub. 71) Edwards and Siphthorp (sub. 73) Goodstart Early Learning (sub. 70) Grattan Institute (sub. 61) LSIA (sub. 48)	MGSE (sub. 54) Minderoo Foundation (sub. 27) Mitchell Institute (sub. 31) MCRI (sub. 47) NCEC (sub. 49) National Congress of Australia's First Peoples (sub. 44) NSW Government (sub. 79) PAI (sub. 36) QUT Faculty of Education (sub. 19) RIPPLE (sub. 45) School of Education and Professional Studies, Griffith University (sub. 76) SVA (sub. 59) Speech Pathology Australia (sub. 35) Telethon Kids Institute (sub. 15) UWA Faculty of Education (sub. 10) UTAS Faculty of Education (sub. 33)

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Table B.2 (continued)

<i>Topic</i>	<i>Submission</i>	
<b>Students with disability</b>	AASE (sub. 30) CYDA (sub. 66) LSIA (sub. 48)	SPELD NSW (sub. 37) Speech Pathology Australia (sub. 35)
<b>Marginalised groups<sup>c</sup></b>	CREC (sub. 53) Goodstart Early Learning (sub. 70) Grattan Institute (sub. 61) Minderoo Foundation (sub. 27)	National Congress of Australia's First Peoples (sub. 44) NT Government (sub. 77) The Smith Family (sub. 60)
<b>Education practices</b>	Australian Academy of Science (sub. 67) Grattan Institute (sub. 61) QUT Faculty of Education (sub. 19)	Speech Pathology Australia (sub. 35) SVA (sub. 59)
<b>Other</b>	ALIA (sub. 43) Life Course Centre (sub. 9)	Grattan Institute (sub. 61) PAI (sub. 36)
Education workforce		
<b>Initial teacher education</b>	AITSL (sub. 5)	Mitchell Institute (sub. 31)
<b>Staff capabilities or qualifications</b>	AASE (sub. 30) PAI (sub. 36)	SVA (sub. 59) United Voice (sub. 42)
<b>Other</b>	AITSL (sub. 5) ALIA (sub. 43) Life Course Centre (sub. 9) PAI (sub. 36)	QUT Faculty of Education (sub. 19) Speech Pathology Australia (sub. 35) United Voice (sub. 42)
External influences		
<b>Home learning environment</b>	Edwards and Sipthorp (sub. 73)	Telethon Kids Institute (sub. 15)
<b>Parental engagement and attitudes</b>	Life Course Centre (sub. 9) CCYP WA (sub. 40)	NCVER (sub. 65) QUT Faculty of Education (sub. 19)
<b>Other</b>	Brooks and Redmond (sub. 38)	FECCA (sub. 29)

<sup>a</sup> Data access, reporting and linkage issues are not considered in this table. <sup>b</sup> Includes children not in early childhood education and care. <sup>c</sup> Marginalised groups include students experiencing disadvantage, students living in regional and remote areas, Indigenous students and students with refugee backgrounds.

**Table B.3 Gaps in education evidence<sup>a</sup>**

<i>Topic</i>	<i>Submission</i>
Specific evidence about early childhood education and care	
<b>Policies, programs and practices</b>	AIHW (sub. 55) CCC (sub. 58) CCCC NSW (sub. 51) Early Start, University of Wollongong (sub. 26) Goodstart Early Learning (sub. 70) MGSE (sub. 54) NSW Government (sub. 79)
<b>Quality</b>	ACECQA (sub. 11) Biddle and Breunig (sub. 25) CCC (sub. 58) CCCC NSW (sub. 51) ECA (sub. 71) Edwards and Siphthorp (sub. 73) Goodstart Early Learning (sub. 70) Mitchell Institute (sub. 31) RIPPLE (sub. 45) Telethon Kids Institute (sub. 15) UWA Faculty of Education (sub. 10) United Voice (sub. 42)
<b>Attendance</b>	ACECQA (sub. 11) AIHW (sub. 55) Biddle and Breunig (sub. 25) CCC (sub. 58) ECA (sub. 71) Goodstart Early Learning (sub. 70) Mitchell Institute (sub. 31) RIPPLE (sub. 45) United Voice (sub. 42)
<b>Other</b>	DET (sub. 68) AIHW (sub. 55) Biddle and Breunig (sub. 25) CCC (sub. 58) ECA (sub. 71) Early Start, University of Wollongong (sub. 26) Goodstart Early Learning (sub. 70) NCSEHE (sub. 13) NSW Government (sub. 79) QUT Faculty of Education (sub. 19) UWA Faculty of Education (sub. 10) United Voice (sub. 42)
Specific evidence about school education	
<b>Multiple topics</b>	Biddle and Breunig (sub. 25) Mitchell Institute (sub. 31)
Non-sector specific evidence	
<b>Policies, programs and practices</b>	Australian Academy of Science (sub. 67) ALIA (sub. 43) CYDA (sub. 66) CCYP WA (sub. 40) de Lemos et al. (sub. 6) ECA (sub. 71) FDCA (sub. 63) Fraser Mustard Centre (sub. 52) Grattan Institute (sub. 61) Hempenstall (sub. 1) Mitchell Institute (sub. 31) MCRI (sub. 47) National Congress of Australia's First Peoples (sub. 44) NT Government (sub. 77) QUT Faculty of Education (sub. 19) SVA (sub. 59) The Smith Family (sub. 60)
<b>Students with disability</b>	CYDA (sub. 66) Mitchell Institute (sub. 31)

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Table B.3 (continued)

<i>Topic</i>	<i>Submission</i>	
<b>Marginalised groups<sup>b</sup></b>	ACECQA (sub. 11) AIHW (sub. 55) Biddle and Breunig (sub. 25) Early Start, University of Wollongong (sub. 26) Goodstart Early Learning (sub. 70)	Mitchell Institute (sub. 31) NCSEHE (sub. 13) National Congress of Australia's First Peoples (sub. 44) The Smith Family (sub. 60) UWA Faculty of Education (sub. 10)
<b>Wellbeing and non-cognitive research</b>	Life Course Centre (sub. 9) Biddle and Breunig (sub. 25) CCYP WA (sub. 40) CCC (sub. 58) MGSE (sub. 54) Mitchell Institute (sub. 31)	PAI (sub. 36) QUT Faculty of Education (sub. 19) SVA (sub. 59) Telethon Kids Institute (sub. 15) United Voice (sub. 42)
<b>External influences</b>	ACECQA (sub. 11) ACER (sub. 32) AHURI (sub. 74) AIHW (sub. 55) CREC (sub. 53) CCC (sub. 58) LSIA (sub. 48)	Mitchell Institute (sub. 31) MCRI (sub. 47) NCEC (sub. 49) NCVET (sub. 65) National Congress of Australia's First Peoples (sub. 44)
<b>Longitudinal outcomes</b>		
<i>Value-added</i>	Grattan Institute (sub. 61)	CCYP WA (sub. 40)
<i>General</i>	ACECQA (sub. 11) Biddle and Breunig (sub. 25) CCC (sub. 58) CCYP WA (sub. 40) CCCC NSW (sub. 51) Grattan Institute (sub. 61) Mitchell Institute (sub. 31) MCRI (sub. 47)	NCEC (sub. 49) NCSEHE (sub. 13) NCVET (sub. 65) NSW Government (sub. 79) PAI (sub. 36) QUT Faculty of Education (sub. 19) SVA (sub. 59) United Voice (sub. 42)
<b>Education workforce research</b>	DET (sub. 68) AITSL (sub. 5) Life Course Centre (sub. 9) Biddle and Breunig (sub. 25) LSIA (sub. 48)	Mitchell Institute (sub. 31) PAI (sub. 36) RIPPLE (sub. 45) United Voice (sub. 42)
<b>Other</b>	DET (sub. 68) Life Course Centre (sub. 9) Biddle and Breunig (sub. 25) Brooks and Redmond (sub. 38) CCYP WA (sub. 40)	Edwards and Siphthorp (sub. 73) Mitchell Institute (sub. 31) SVA (sub. 59) SPELD NSW (sub. 37) Telethon Kids Institute (sub. 15)

<sup>a</sup> Many topics in this table relate to the broader issue of what works best to improve education outcomes. <sup>b</sup> Marginalised groups include students experiencing disadvantage, students living in regional and remote areas, Indigenous students and students with refugee backgrounds.



**Table B.4 Gaps in evidence creation and use<sup>a</sup>**

<i>Topic</i>	<i>Submission</i>	
Researcher <sup>b</sup> skills	DET (sub. 68) CREC (sub. 53) ECA (sub. 71) Fraser Mustard Centre (sub. 52) Grattan Institute (sub. 61) IEUA (sub. 18) Lawry and Lux-Lee (sub. 48) MGSE (sub. 54)	Mitchell Institute (sub. 31) NCVER (sub. 65) National Congress of Australia's First Peoples (sub. 44) QUT Faculty of Education (sub. 19) RIPPLE (sub. 45) Telethon Kids Institute (sub. 15)
Researcher <sup>b</sup> funding and resources	ACARA (sub. 62) DET (sub. 68) CREC (sub. 53) ECA (sub. 71) Early Start, University of Wollongong (sub. 26) Grattan Institute (sub. 61)	Mitchell Institute (sub. 31) MCRI (sub. 47) NCVER (sub. 65) National Congress of Australia's First Peoples (sub. 44) QUT Faculty of Education (sub. 19)
Initial teacher education	Early Start, University of Wollongong (sub. 26) Hempenstall (sub. 1) Manickam (sub. 7) Minderoo Foundation (sub. 27)	Snow, Pamela (sub. 4) SPELD NSW (sub. 37) Telethon Kids Institute (sub. 15) Tidswell (sub. 2)
Educators' creation of evidence <sup>c</sup>	AHISA (sub. 50) AITSL (sub. 5) Early Start, University of Wollongong (sub. 26) Hempenstall (sub. 1) Gold Coast Dyslexia Support Group (sub. 56) IEUA (sub. 18)	IEUA-QNT (sub. 21) Meyer (sub. 34) Minderoo Foundation (sub. 27) Mitchell Institute (sub. 31) Telethon Kids Institute (sub. 15)
Dissemination and translation of evidence	ACER (sub. 32) CEM (sub. 72) ECA (sub. 71) Grattan Institute (sub. 61)	LSIA (sub. 48) Mitchell Institute (sub. 31) SVA (sub. 59)
Educators' use of evidence <sup>d</sup>	CEM (sub. 72) Early Start, University of Wollongong (sub. 26) Mathers (sub. 8)	SVA (sub. 59) SPELD NSW (sub. 37)
Governments' use of evidence <sup>d</sup>	Fraser Mustard Centre (sub. 52) IEUA (sub. 18) Mathers (sub. 8)	Meyer (sub. 34) SPELD NSW (sub. 37) United Voice (sub. 42)

<sup>a</sup> Gaps in the creation of evidence due to data access, reporting and linkage issues are not considered. <sup>b</sup> Researchers include individuals in academia and government departments. <sup>c</sup> Includes gaps in teachers' capacity and capability to use and collect data to create evidence, and then use this evidence to inform practice. <sup>d</sup> Includes gaps in the use of evidence that has been generated by researchers, such as evidence on practices and programs that work best.



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## C Australia's education data and evidence base

This appendix takes stock of the main collections of education data (section C.1) and of data on the external factors that influence education outcomes (section C.2). It also describes the main sources of education evidence — regular data reports and evidence repositories (section C.3).

### C.1 The main collections of education data in Australia

Education data are primarily collected by education providers (early childhood education and care (ECEC) services and schools). Some of these data, for example, informal test results, are held only at a provider level (box C.1). Other data are sent to state and territory<sup>31</sup> or national level authorities where they are aggregated into the collections that are the focus of this section. The collections are discussed at the highest level at which they are held — state or national.

#### Box C.1 Examples of provider-level data

##### Early childhood education and care providers

The *Education and Care Services National Law (National Law)* and *Education and Care Services National Regulations (National Regulations)*, require approved ECEC providers to collect and hold a range of data that are not held by state or national authorities.

For example, enrolment data can be very comprehensive. The National Regulations outline the information that an approved ECEC provider (including family day care) must request on an enrolment form. This information includes data that is passed on to authorities such as the:

- full name, date of birth, gender and address of the child
- language spoken at home and cultural background of the child and parents.

However, it also includes data that may not be held by authorities such as a child's healthcare needs (medical conditions, allergies), medical management plan and dietary requirements (ACECQA 2013a). ECEC providers may also request other (provider-specific) information, for example, about a child's routine and home environment.

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<sup>31</sup> Referred to as state from here on unless otherwise indicated.

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### Box C.1 (continued)

The National Regulations also stipulate that approved providers must keep:

- accurate attendance records that include each child's arrival and departure times
- documentation that includes an analysis of learning for each child
- assessments of each child's
  - development needs
  - interests and experiences
  - participation in the provider's educational program
  - progress against the learning outcomes of the educational program (ACECQA 2013a).

ECEC providers are not required to pass these data on to state or national authorities.

### Schools

The amount of data held only at a school level varies by school sector and by the capabilities of school's online data information systems. Unlike Independent schools, government and Catholic schools operate in networks, and are, therefore, more likely to provide data to others (for example, education bodies) (ISCA, sub. 39). Online data information systems vary in the degree to which they integrate with a central data depository and in the range of data types that they can capture. The higher the level of capability, the less likely it is that a school is the only holder of the data that it collects.

Some types of data that are much more likely to be held only at a school level include results from classroom-based student assessments (set by the school) and school-based surveys. For example, teachers assess students using classroom-based standardised assessments such as the *Progressive Achievement Tests* and *Tests of Reading Comprehension* — both produced by the Australian Council for Educational Research — to gauge student learning and inform teaching practices. And some schools assess student wellbeing through school-based surveys such as the *Social-Emotional Wellbeing Survey* — also produced by the Australian Council for Educational Research.

## Early childhood education and care data collections

### State collections

State ECEC collections tend to be focused on preschools because they are a state responsibility, in contrast with childcare which is overseen by the Australian Government. The main state level ECEC collections are summarised in table C.1. All jurisdictions administer a Preschool Census covering the characteristics of preschoolers, their teachers and the services they attend. Some jurisdictions run additional collections, for example, about child health and development.

**Table C.1 Selected state ECEC collections**

<i>Collection</i>	<i>Type of data collected</i>	<i>State</i>
Preschool Census <sup>a</sup>	<ul style="list-style-type: none"> <li>• Child level — personal characteristics, program hours, program fees, whether program is delivered by a qualified teacher and if the child is repeating</li> <li>• Staff level — personal characteristics, role, type of activity engaged in, highest level of qualification</li> <li>• Service provider level — activity type, delivery setting, government funding type, management type, service operation information</li> </ul>	All states
School Entry Health Assessment	<ul style="list-style-type: none"> <li>• Physical development</li> <li>• Parents' Evaluation of Development Status</li> </ul>	WA
Kindergarten Development Check <sup>b</sup>	21 critical markers in the areas of: <ul style="list-style-type: none"> <li>• cognitive development</li> <li>• fine and gross motor skill</li> <li>• listening, speaking and understanding</li> <li>• personal and social behaviour</li> </ul>	Tas

<sup>a</sup> Occurs in August of every year in all jurisdictions. Contributes to the *National Early Childhood Education and Care Collection*. Participation for state government-managed and government-funded preschool providers is compulsory. In most of the jurisdictions, long day care providers offering a preschool program are not invited to complete the census; however, if eligible for the Child Care Benefit scheme they are required to provide similar information to the Australian Government through the *Child Care Management System*. <sup>b</sup> Administered in all public and Catholic school-run kindergartens (preschools).

Sources: ABS (2016b); TASDoE (2016a); WADoH (2015).

## National early childhood education and care collections

Table C.2 outlines the main ECEC data collections held at the national level which cover information about children, staff and service providers (across both preschools and childcare), including service quality and child development. The division of responsibility for ECEC between the state and national governments (and the number of agencies involved) makes ECEC collections relatively complicated. In addition, the names of some collections are a poor reflection of their contents. These issues are clarified in a brief description of each collection following table C.2. A major initiative to link ECEC data, the *National Early Childhood Development Researchable Data Set* is also briefly discussed.

**Table C.2 Main national ECEC collections**

<i>Collection</i>	<i>Type of data collected</i>
National ECEC Collection	<ul style="list-style-type: none"> <li>• Child level — personal characteristics (name, age, Indigenous status), program hours (enrolled, attended, available), program fees, whether program is delivered by a qualified teacher and if the child is repeating</li> <li>• Staff level — personal characteristics (name, age, Indigenous status), role, type of activity engaged in, highest level of qualification (relevant and ECEC specific)</li> <li>• Service provider level — activity type, delivery setting, government funding type, management type, service operation information (weeks open)</li> </ul>
Child Care Management System	<ul style="list-style-type: none"> <li>• Child level — personal characteristics (name, age, gender, Indigenous status), disability/special needs, enrolment information, attendance/absences (daily), fees</li> <li>• Staff level — personal characteristics (name, age), role, position, qualifications</li> <li>• Service provider level — age group, weeks/hours open, places offered, programs offered and details, number of staff, fee information (daily cost and inclusions)</li> </ul>
National ECEC Workforce Census	<ul style="list-style-type: none"> <li>• Staff level — background, size and qualifications (relevant and teaching) of workforce, hours of work, years of experience, professional development, job tenure</li> <li>• Service level — hours of operation, children attending childcare (age, special needs)</li> <li>• Preschool characteristics — availability, curriculum or framework program is based on, qualifications and hours worked of staff delivering program</li> </ul>
Australian Early Development Census <sup>a</sup>	<p>Approximately 100 questions across five areas of child development:</p> <ul style="list-style-type: none"> <li>• physical health and wellbeing</li> <li>• social competence</li> <li>• emotional maturity</li> <li>• language and cognitive skills (school-based)</li> <li>• communication skills and general knowledge</li> </ul>
National Quality Agenda IT System	<p>Service level quality data pertaining to:</p> <ul style="list-style-type: none"> <li>• educational program and practice</li> <li>• children's health and safety</li> <li>• physical environment</li> <li>• staffing arrangements</li> <li>• relationships with children</li> <li>• collaborative partnerships with families and communities</li> <li>• leadership and service management.</li> </ul> <p>Data on serious incidents, complaints, waivers and other compliance and service contextual information</p>
Childhood Education and Care Survey	<ul style="list-style-type: none"> <li>• Socioeconomic information</li> <li>• Usual care arrangements (types of care, duration and cost)</li> <li>• Care arrangements used in the survey reference week (types of care, duration, cost)</li> <li>• Attendance at preschool or preschool program (usually or in the survey week)</li> <li>• Need for additional care or preschool</li> <li>• Early childhood education and learning activities</li> </ul>

<sup>a</sup> Previously known as the *Australian Early Development Index*.

Sources: ABS (2015a, 2016b); ACECQA (sub. 11); Australian Government (2014); DAE (2015); DSS (2014); SRC (2014).

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### *Administrative census data on preschools and childcare*

The *National Early Childhood Education and Care Collection* (NECECC) is a census of Australian children enrolled in preschool. It was established — under the *National Information Agreement on Early Childhood Education and Care* — to provide comparable statistics on preschools across the jurisdictions. The NECECC is underpinned by data standards specified within the *National Early Childhood Education and Care National Minimum Dataset* and aims to compile child, staff and service provider statistics from all in-scope service providers delivering a preschool program.

The scope of the collection covers all service providers delivering a preschool program to children aged 3 to 6 years who were enrolled during a reference period (ABS 2016b). The ABS compiles data for the NECECC using administrative data provided by the individual states (stand-alone preschools) and Australian Government Department of Education and Training (DET) (preschools delivered in long day care) (ABS 2016b).

For childcare services only, data are collected through the Australian Government's *Child Care Management System* — a national system for the administration and payment of the Child Care Benefit on behalf of parents to all approved childcare services — family day care, long day care, outside school hours care, occasional care and in home care (DET 2014a). The system captures a large amount of data on service providers, staff and all children (aged 0 to 12 years) who are enrolled in childcare. These data reflect supply and usage of childcare across Australia (DSS 2014).

### *Early childhood education and care workforce data*

Aside from ECEC workforce data collected in the NECECC and *Child Care Management System*, workforce data are collected through the triennial *National Early Childhood Education and Care Workforce Census* that started in 2010. The census is administered by the Social Research Centre on behalf of the DET. The census aims to address gaps in existing administrative collections in relation to both workforce data and other elements of ECEC. These gaps include the extent of participation in and provision of preschool programs, and children with additional needs in childcare. The census also aims to improve the quality of information used in developing and measuring early childhood policy and programs (SRC 2014).

### *Child development data*

Triennially since 2009, child development data are collected nationally through the *Australian Early Development Census* (AEDC) — a nationwide census of early childhood development that takes place in a child's first year of full-time school (DET 2015b). The Australian and state governments work in partnership with various organisations to deliver the census while the collection and management of the data is undertaken by the Social Research Centre in Melbourne. The purpose of the AEDC is to provide a snapshot of the

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development and wellbeing of young children to help inform policy, planning and service delivery. Even though the census is administered in schools, the results are representative of a child's early development.

### *Service quality and other early childhood education and care data*

Data on ECEC service providers are collected by the Australian Children's Education and Care Quality Authority through the *National Quality Agenda IT System* and include service quality data (ACECQA, sub. 11). The service quality data arise from *National Quality Standard* assessments and ratings of ECEC providers. The standards are a key element of the *National Quality Framework* — which sets a national benchmark for ECEC and outside school hours care services (ACECQA 2013a).

For the purpose of providing more in-depth data on child care arrangements and early childhood education, the *Childhood Education and Care Survey* is administered by the ABS every three years (ABS 2015a). The survey includes information on children aged 0 to 12 years and aims to provide information that is not captured in other collections including informal learning activities of children, working patterns of parents and families' requirements for formal care or preschool (ABS 2015a).

### *National Early Childhood Development Researchable Data Set*

The Australian Institute of Health and Welfare (AIHW) is working on a *National Early Childhood Development Researchable Data Set* (NECD RD).

In 2009, COAG released the National Early Childhood Development Strategy — *Investing in the Early Years*. One of the key reform priorities was to provide an evidence base for early childhood development (AIHW 2014b). The AIHW — an authorised Commonwealth data linking authority — was commissioned and funded by the Australian Government to develop a dataset and started to work on the NECD RD in 2011.

The NECD RD aims to link Australian and state government administrative data collections including birth, perinatal, childcare, preschool, AEDC and National Assessment Program — Literacy and Numeracy (NAPLAN) data (AIHW 2014b). The AIHW have proposed that once these data are linked, other data sources could be integrated — for example Medicare records, the National Death Index, the Australian Immunisation Register, jurisdictional emergency department data collections (covering injury surveillance), the Centrelink Payments collection (including family tax benefit information), data from disability service providers, the Child Dental Health Survey, the ABS National Health Survey and the Australian National Infant Feeding Survey (AIHW 2014b).

Once established, AIHW hopes that the NECD RD will enable research in early childhood development across health, human services and ECEC. The project is on hold as the AIHW is negotiating data agreements with each state and awaiting further resources from the Australian Government (AIHW, sub. 55).



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## School education data collections

### School collections common to all states

State education departments hold a wealth of data — particularly about government schools. A number of collections across the states cover similar topic areas, but their specific content can vary by state. While the content may vary by state, some data within these collections are provided by schools to comply with national reporting requirements and are therefore the same across the states.

A selection of collections common to all states is listed in table C.3 and discussed briefly below. The selected collections focus on: characteristics of students, their teachers and the schools they attend; students', parents' and teachers' perceptions of schools; and student development. Examples of other 'in-common' collection topic areas are teacher registration, distance education, home schooling, and student disability, attendance, achievement and discipline. (In some instances these data are collected from government schools only.)

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**Table C.3 Selected state school collections held in common**

<i>Collection</i>	<i>State</i>
<b>Administrative and opinion data</b>	
School Census — February	All
School Census — August	All
School Opinion Survey	All
<b>On-entry assessment data</b>	
Best Start Kindergarten Assessment	NSW
English Online Interview	Vic
Early Learning Record	Qld
School Entry Assessment <sup>a</sup>	SA
On-Entry Assessment Program	WA
Assessment of Student Competencies	NT
Performance Indicators in Primary Schools	ACT and Tas

<sup>a</sup> Currently being developed.

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### *School Census — February and August*

Every school in Australia is required to participate in the *School Census* that occurs in August of each year. Data collected through the census are administrative (school, staff and student) and feed into the *National School Statistics Collection* compiled by the ABS. Government schools across Australia provide data to the relevant government agency in their jurisdiction, while non-government schools use the *Schools Service Point* provided by the DET.

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In addition to the August collection, each state has a February school census that government schools (in all states) and non-government schools (in some states) are asked to complete for funding purposes. Data for the February collection are held by the relevant state only. While both censuses (February and August) collect a common set of information, there is some variation in the data collected across jurisdictions and between collection times — particularly in relation to government schools, which are often required to provide more information than their non-government peers.

### *School Opinion Survey*

Under the *National Education Agreement* and the *Schools Assistance Act*, all schools are required to report on specific items related to student, parent and staff satisfaction in their annual reports (ACARA 2016i). Hence, all schools within Australia participate in the *School Opinion Survey*.

The Education Council has approved a list of both student and parent items that must be included in the survey. The student list contains 12 questions, while the parent list contains 14 (ACARA 2016i). While the list is common across jurisdictions and school sectors, the structure and questions included the *School Opinion Survey* still vary by state. For example, Victoria conducts three surveys — the *Attitudes to School Survey*, the *School Staff Survey* and the *Parent Opinion Survey* (VicDET 2016c); while Queensland conducts five surveys — the *Parent/Caregiver Survey*, the *Student Survey*, the *Student Survey for Special Schools*, the *Staff Survey*, and the *Principal Survey* (QldDET 2016b).

### *On-entry assessments*

Examples of assessments used at school entry around the country are provided in box C.2. On-entry assessments are typically compulsory in government schools only. Evidence suggests that non-government schools also use them (however data may not be held by state authorities) (CEONT 2014; CEOWA 2013). The Independent Schools Council of Australia (sub. 39) noted that most Independent schools participate in jurisdictional early-years assessments.

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## Box C.2      **Selection of school-entry assessments**

*Performance Indicators in Primary Schools* is a mandatory on-entry assessment in all public schools in Tasmania and the ACT. The purpose of the assessment is to assess early reading, phonics and numeracy skills. The assessment is generally done twice a year (Terms 1 and 4) and allows the teacher to gain insight into how the student goes about determining the answers to questions, not just whether the student answers correctly (ACTDET 2015; TasDoE 2016b). The assessment aims to inform parents and assist teachers in identifying students who may need early intervention.

The *On-Entry Assessment Program* is used in Western Australia to assess a student's literacy and numeracy skills. The assessment is compulsory for all (Foundation Year) students in public schools and has two assessment points, Term 1 and Term 4 (WADET 2010b). The assessments are the *Online Interview (English and Mathematics)*. These involve a one-to-one interview between the student and teacher using texts and downloaded purpose-specific resources. In Victoria, the English component of the *Online Interview* is mandatory in the foundation year of primary school, and use of the Mathematics counterpart is encouraged (VicDET 2016a). The purpose of the assessment is to identify students at risk across the two domains to allow early intervention.

The *Assessment of Student Competencies* is an on-entry screening tool used in the Northern Territory. The *Assessment* is compulsory for all Foundation Year students in public schools and consists of 47 competencies across four domains: motor skills, healthy living, literacy and numeracy (NTGov 2014). Like other on-entry assessments, its purpose is to inform parents and teachers to allow planning of learning programs to meet the needs of each student.

### School collections specific to certain states

There are also collections specific to certain states. These arise because of differences in policy initiatives and/or the sophistication of online data information systems used by schools and authorities to store and communicate data (more sophisticated systems are associated with larger collections). A selection of school data collections specific to certain states that arise because of differences in policy settings (for example, a focus on student wellbeing, health, connectedness, engagement, and social and emotional development) is listed in table C.4.

In addition, some non-government school peak bodies hold data on their member schools. This is more common for Catholic school associations because they operate in networks. However, within networks the holding of data depends on available resources and therefore differs across jurisdictions. Independent school associations within each state do not hold data on their member schools (ISCA, sub. 39).

**Table C.4 Selected state school collections specific to jurisdictions**

<i>Survey</i>	<i>Scope</i>	<i>Purpose</i>	<i>Type of data collected</i>	<i>State</i>
School Students Health Behaviours Survey	<ul style="list-style-type: none"><li>• All schools</li><li>• Students 12 to 17 years of age</li></ul>	Better understand the health behaviours of students to help improve delivery and quality of services	<ul style="list-style-type: none"><li>• Nutrition and eating</li><li>• Height and weight</li><li>• Physical activity</li><li>• Injury, psychological stress, sun protection</li><li>• Substance abuse</li></ul>	NSW
Tell Them From Me	<ul style="list-style-type: none"><li>• All government schools:</li><li>• Primary — Years 4–6</li><li>• Secondary — Years 7–12</li></ul>	Provide school principals and leaders with insight into student engagement and teacher interaction	<ul style="list-style-type: none"><li>• Student engagement and wellbeing</li><li>• Effective learning time</li><li>• Teacher effectiveness</li><li>• Student aspirations</li><li>• Interest and motivation</li></ul>	NSW
Student Health and Wellbeing Survey (About You)	<ul style="list-style-type: none"><li>• All schools</li><li>• Students in Years 5, 8 and 11</li></ul>	Monitor health and wellbeing outcomes of children to inform policy	<ul style="list-style-type: none"><li>• Physical health</li><li>• Psychological wellbeing</li><li>• Perceived academic performance</li><li>• School satisfaction</li><li>• School and family relationships</li></ul>	Vic
Early School Leavers Survey	<ul style="list-style-type: none"><li>• All schools</li><li>• Sample of students who left school prior to completing Year 12</li></ul>	Understand the degree to which students are leaving school early and their post-school destinations	<ul style="list-style-type: none"><li>• Pathways taken after leaving (work or study)</li></ul>	Qld
Middle Years Development Instrument	<ul style="list-style-type: none"><li>• Children aged 8 to 14 years</li></ul>	Provide schools, the community and government with insight into non-academic factors relevant to learning and participation	<ul style="list-style-type: none"><li>• Social and emotional development</li><li>• Connectedness</li><li>• School experiences</li><li>• Physical health and wellbeing</li><li>• Constructive use of afterschool time</li></ul>	SA

*Sources:* CESE (2015); NSWDoH (2015); QldDET (2016a); SADECS (2016a); VicDET (2015b).

## National school education collections

Main national collections of school education data include census data (table C.5) on all schools, students and staff; students with disabilities; student achievement; and data created via point-in-time surveys and longitudinal studies (table C.6). A brief discussion of the longitudinal collections is also presented in box C.3. Australia also participates in four international student assessment programs and a teaching survey (table C.7).

**Table C.5 Main national school collections — census data**

<i>Collection</i>	<i>Type of data collected</i>	<i>Scope</i>
National Schools Statistics Collection <sup>a</sup>	<ul style="list-style-type: none"> <li>• Student level — participation (full- or part-time), background, gender, age, school level (primary, secondary) and year</li> <li>• Staff level — school level, gender and role</li> <li>• School level — type (government, non-government), affiliation (Catholic, Independent), finance (government only), size of enrolments, student–staff ratio, retention measures</li> </ul>	All primary and secondary schools
National Data Collection <sup>b</sup>	<ul style="list-style-type: none"> <li>• Participation — enrolment, attendance, participation in National Assessment Program assessments, participation in vocational education and training (VET) including VET in schools, participation in post-schooling learning pathways and work</li> <li>• Achievement — National Assessment Program assessments</li> <li>• Attainment — school completion and attainment (Year 12 or equivalent), attainment of young people in post-school learning pathways (level of qualification), outcomes of schooling</li> <li>• Equity — students' Indigenous status, sex, language background, geographic location, socioeconomic background and disability</li> </ul>	All primary and secondary schools (Years 1 to 10)
Non-government schools collections — School Service Point <sup>c</sup>	<ul style="list-style-type: none"> <li>• Financial</li> <li>• Student attendance</li> <li>• Socioeconomic status</li> <li>• School census data</li> <li>• Other compliance data</li> </ul>	Non-government schools
Nationally Consistent Collection of Data on School Students with Disability	<ul style="list-style-type: none"> <li>• Number of students with disabilities enrolled in all Australian schools</li> <li>• Location of these students</li> <li>• Broad level of adjustment being provided to assist these students</li> </ul>	Students with disability across all schools
National Assessment Program — Literacy and Numeracy <sup>b,d</sup>	<ul style="list-style-type: none"> <li>• Reading</li> <li>• Writing (persuasive and narrative)</li> <li>• Language conventions (spelling, grammar and punctuation)</li> <li>• Numeracy</li> </ul>	All students in Years 3, 5, 7 and 9
Higher Education Statistics Collection	<ul style="list-style-type: none"> <li>• Personal characteristics</li> <li>• Enrolment information</li> <li>• Education history</li> </ul>	All students enrolled in higher education (including teachers)

<sup>a</sup> Derived from the annual School Census. The ABS works with the various state departments of education, the DET and the Education Council to create the collection. <sup>b</sup> Compiled nationally by the Australian Curriculum, Reporting and Assessment Authority in accordance with the Schedule of Key Performance Measures and data sources established in the *Measurement Framework for Schooling in Australia 2015*. <sup>c</sup> Subset provided to the ABS for the National School Statistics Collection. <sup>d</sup> Part of the National Assessment Program.

*Sources:* ABS (2016e); ACARA (2015b, 2015e); DET (2015c, 2016d); Education Council (2016); NAP (2013d, 2013e).

**Table C.6 Main national school collections — point-in-time and longitudinal data**

<i>Collection</i>	<i>Topics of data collection</i>	<i>Scope</i>
<b>Point-in-time</b>		
NAP sample assessment <sup>a</sup>	<ul style="list-style-type: none"> <li>• Science</li> <li>• Civics and citizenship</li> <li>• Information and communication literacy</li> </ul>	<ul style="list-style-type: none"> <li>• Year 6</li> <li>• Years 6 and 10</li> <li>• Years 6 and 10</li> </ul>
Australia Children Wellbeing Project <sup>b</sup>	<ul style="list-style-type: none"> <li>• Family, health, demographics, money, maternal wellbeing</li> <li>• Friends, school, community and neighbourhood</li> <li>• Other areas of wellbeing</li> </ul>	Students aged 8 to 14 years (Years 4, 6 and 8) across all school sectors
Staff in Australia's Schools Survey	<ul style="list-style-type: none"> <li>• Background, qualifications</li> <li>• Work, career intentions</li> <li>• School staffing issues</li> </ul>	School teachers and leaders in all primary and secondary schools
<b>Longitudinal</b>		
Longitudinal Study of Australian Children	<ul style="list-style-type: none"> <li>• Family demographics, relationships, parent status, parenting</li> <li>• Program characteristics (school, preschool, childcare)</li> <li>• Family finances, paid work, housing</li> <li>• Child health status, health behaviour, risk factors</li> <li>• Home education and learning environment, social capital</li> <li>• Learning and cognition outcomes, social and emotional development</li> </ul>	<ul style="list-style-type: none"> <li>• B cohort — children aged 0 to 1 year at survey entry</li> <li>• K cohort — children aged 4 to 5 years at survey entry</li> </ul>
Longitudinal Study of Indigenous Children	<ul style="list-style-type: none"> <li>• Children — physical and mental health, social and cognitive development, family and community relationships, significant events</li> <li>• Children's families — health, work, lifestyle and family, community connectedness</li> <li>• Children's communities — facilities, services, social and community issues</li> <li>• Services — childcare, education, health, other services used</li> </ul>	<ul style="list-style-type: none"> <li>• B cohort — children aged 6 to 18 months at survey entry</li> <li>• K cohort — children aged 3.5 to 5 years at survey entry</li> </ul>
Longitudinal Survey of Australian Youth	<p>First wave:</p> <ul style="list-style-type: none"> <li>• student/individual — literacy and numeracy skills, demographic background, study and vocational plans, attitudes to school</li> <li>• school — resources, environment, staff qualifications, teacher morale</li> </ul> <p>Subsequent waves — individual:</p> <ul style="list-style-type: none"> <li>• educational participation, attainment (completion of highest level of schooling) and performance (academic) in school, vocational training, higher education</li> <li>• employment, job history, job-seeking activities</li> <li>• living arrangements, finance, health</li> </ul>	Students aged 15 years or in Year 9

<sup>a</sup> Part of the National Assessment Program (NAP). Run on a rolling basis every three years since 2003. <sup>b</sup> First conducted in 2015. The survey is designed to be internationally comparable as survey items are taken from two international surveys — the *Health Behaviour in School-aged Children* and the *Children's Worlds* survey.

Sources: ACER (2016d); DET (2016c); DSS (2015a); Edwards (2012); NAP (2013b, 2013c, 2013f); Nguyen et al. (2010); Redmond et al. (2016).

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## Box C.3 Longitudinal collections

### Longitudinal Study of Australian Children

The *Longitudinal Study of Australian Children* (LSAC), also known as *Growing Up in Australia*, has followed the development of Australian children and their families since 2004 (DSS 2015c). The first wave included 10 000 children across two age cohorts (Edwards 2012). The LSAC intends to follow children for at least 14 years. The participants include the child, and their parents, carers and teachers. Data collection occurs every two years and, to date, six collection waves have been completed.

The LSAC is funded by the Australian Government and managed by the National Centre for Longitudinal Data — within the Department of Social Services — in partnership with the Australian Institute of Family Studies, the ABS, a group of researchers from universities and research organisations across Australia and a Data Expert Reference Group. The Data Expert Reference Group consists of representatives from the Department of Social Services, the Australia Institute of Family Studies and the ABS, as well as external statistical experts (AIFS 2015a; DSS 2015c).

### Longitudinal Study of Indigenous Children

The *Longitudinal Study of Indigenous Children* (LSIC), also known as *Footprints in Time*, is an ongoing study that has followed the development of two age cohorts of Indigenous children and their families in Australia since 2008 (DSS 2015b). The LSIC began with over 1600 Indigenous children across the two cohorts (DSS 2015b). The sample selection process was non-random in design and the sample was not nationally representative. Instead, it was designed to be broadly reflective of the geographic distribution of Indigenous Australian children aged 0 to 5 years across Australian states' urban, regional and remote areas (DSS 2015a). Data are collected from children and their parents approximately annually and to date, eight waves of data collection have been completed (DSS 2015b).

Initiated and funded by the Australian Government, LSIC is managed within the Department of Social Services by the National Centre for Longitudinal Data, with involvement from the *Footprints in Time* Steering Committee, the Longitudinal Studies Advisory Group and contractors (DSS 2015a).

### Longitudinal Survey of Australian Youth

The *Longitudinal Survey of Australian Youth* (LSAY) is a research program that follows young Australians as they transition from compulsory schooling to further study, work and other pursuits. The sample — initially 10 000 participants — is surveyed annually over 10 years. To date, LSAY has included six cohorts — 1995, 1998, 2003, 2006, 2009 and 2015 (DET 2015a).

The LSAY is funded and managed by the DET, with involvement from the National Centre for Vocational Education Research and the Wallis Consulting Group (DET 2015d).

**Table C.7 Selected national school collections — international collections<sup>a</sup>**

<i>Collection</i>	<i>Topics of data collection</i>	<i>Scope</i>	<i>Frequency (years)</i>
Programme for International Student Assessment (PISA) <sup>b,c</sup>	<ul style="list-style-type: none"> <li>• Assessment in reading, mathematics and science</li> <li>• Non-cognitive information</li> <li>• Contextual information on student and school</li> </ul>	Students aged 15 years	Three
Trends in International Mathematics and Science Study (TIMSS) <sup>c,d</sup>	<ul style="list-style-type: none"> <li>• Assessment in mathematics and science</li> <li>• Contextual information on student and school</li> </ul>	Students in Years 4 and 8	Four
Progress in International Reading Literacy Study (PIRLS) <sup>c,d</sup>	<ul style="list-style-type: none"> <li>• Assessment in reading</li> <li>• Contextual information on student and school</li> </ul>	Students in Year 4	Five
International Computer and Information Literacy Study (ICILS) <sup>d</sup>	<ul style="list-style-type: none"> <li>• Assessment in computer and information literacy</li> <li>• Contextual information on student and school</li> </ul>	Students in Year 8	Five
Teaching and Learning International Survey (TALIS) <sup>b</sup>	<ul style="list-style-type: none"> <li>• Learning environment</li> <li>• Appraisal and feedback</li> <li>• Teaching practices and classroom environment</li> <li>• Development and support</li> <li>• School leadership</li> <li>• Self-efficacy and job satisfaction</li> </ul>	Teachers (Year 7 to 10) and principals	Five

<sup>a</sup> Australian Council for Educational Research is responsible for collecting data for all international data collections. <sup>b</sup> The OECD is responsible for the collection. <sup>c</sup> Part of Australia's National Assessment Program. <sup>d</sup> The International Association for the Evaluation of Educational Achievement International Study Centre is responsible for the collection.

Sources: ACER (2016e); DET (2016c); IEA (2016a, 2016b); NAP (2013a); OECD (2015a, 2015d).

## C.2 Data on external influences on education outcomes

Data that pertain to external influences (factors that affect education outcomes but that are not directly influenced by the education system) are an important input into research about education outcomes (chapter 2). A selection of national data collections pertaining to health, social services, demographics and the labour force are listed in table C.8.



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**Table C.8 Selected national collections on external influences**

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<i>Type of data</i>	<i>Data collections</i>
Health	<ul style="list-style-type: none"><li>• National Perinatal Data Collection</li><li>• Maternity Information Matrix</li><li>• Medicare data</li><li>• Australian Childhood Immunisation Register</li><li>• Child Health Records</li><li>• ABS National Health Survey</li><li>• Australian National Infant Feeding Survey</li><li>• National Nutrition and Physical Activity Survey</li><li>• The Australian Child and Adolescent Survey of Mental Health and Wellbeing</li></ul>
Social services	<ul style="list-style-type: none"><li>• Centrelink data — including receipt of family tax benefits</li><li>• Child protection data</li></ul>
Demographics	<ul style="list-style-type: none"><li>• Census of Population and Housing</li><li>• Household, Income and Labour Dynamics in Australia Survey (HILDA)</li><li>• Australian Tax Office data</li></ul>
Labour force	<ul style="list-style-type: none"><li>• Labour Force Survey</li><li>• Survey of Education and Training</li><li>• Survey of Education and Work</li><li>• Work Related Training and Adult Learning Survey</li></ul>

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### C.3 The main sources of education evidence in Australia

Education data are used to create evidence for two key purposes (chapter 2) — monitoring of system performance, and evaluation of the effectiveness and value for money of policies, programs and practices. This evidence is disseminated to decision makers in the education system through regular reporting and evidence repositories including clearinghouses, peer-reviewed journals and other resources. Most data reporting pertains to monitoring and benchmarking, and contributes to accountability and transparency in the education sector. Data are reported in a range of ways including annual reports and regular statistical publications and through avenues like reports to parents and online portals.

#### Regular data reports

##### Regular early childhood education and care data publications

There are multiple publications of ECEC data (a selection is presented in table C.9). Some focus solely on preschools, while others cover both preschools and childcare.

**Table C.9 A selection of reporting for ECEC**

<i>Publication name</i>	<i>Purpose</i>	<i>Data collections used<sup>a</sup></i>	<i>Publisher<sup>b</sup></i>
Early Childhood and Child Care in Summary	Reports on the number of children and families using approved childcare, the costs of care and the number and types of childcare services in Australia	<ul style="list-style-type: none"> <li>• CCMS</li> <li>• NQA ITS</li> </ul>	DET (2016b)
National ECEC Workforce Census Report	Overview of the ECEC workforce, characteristics of childcare services, preschool programs and staff insights	<ul style="list-style-type: none"> <li>• National ECEC Workforce Census</li> </ul>	SRC (2014)
Preschool Education, Australia	Presents a range of statistics on children enrolled in and attending a preschool program	<ul style="list-style-type: none"> <li>• NECECC</li> </ul>	ABS (2016b)
Childhood Education and Care, Australia	Presents information on children in both childcare and preschool	<ul style="list-style-type: none"> <li>• Childhood Education and Care Survey</li> </ul>	ABS (2015a)
ACECQA Annual Report	Reports a range of statistics collected on service providers including data pertaining to National Quality Standard assessment and ratings	<ul style="list-style-type: none"> <li>• NQA ITS</li> </ul>	ACECQA (2015)
National Quality Framework Snapshot (quarterly)	Reports on the state and profile of the sector, progress of assessment and rating, and the quality of rating of services	<ul style="list-style-type: none"> <li>• NQA ITS</li> </ul>	ACECQA (2016)
Report on Government Services	Reports on equity and effectiveness of government services, including early childhood development, in Australia	<ul style="list-style-type: none"> <li>• DET data</li> <li>• State departments of education data</li> <li>• NECECC</li> <li>• NQA ITS</li> <li>• AEDC</li> </ul>	SCRGSP (2016b)
Australian Early Development Census National Report <sup>c</sup>	Snapshot (community, state and national) of the development and wellbeing of young children to help inform policy, planning and service delivery	<ul style="list-style-type: none"> <li>• AEDC</li> </ul>	DET (2015)

<sup>a</sup> Child Care Management System (CCMS); National Quality Agenda IT System (NQA ITS); National Early Childhood Education and Care Collection (NECECC); Australian Government Department of Education and Training (DET); Australian Early Development Census (AEDC). <sup>b</sup> Australian Children's Education and Care Quality Authority (ACECQA); Australian Government Department of Education and Training (DET); Steering Committee for the Review of Government Service Provision (SCRGSP); Social Research Centre (SRC). <sup>c</sup> School-level data are available to the school only through School Profiles.

## Regular school education data publications

Government and non-government bodies are responsible for a range of publications on school education (table C.10). In addition, schools publish annual reports and the Australian Council for Educational Research publishes results from the international assessments that it manages, such as the Programme for International Student Assessment (PISA) (ACER 2016e).

**Table C.10 A selection of reporting for school education**

<i>Name of publication</i>	<i>Purpose</i>	<i>Data collections used<sup>a</sup></i>	<i>Publisher<sup>b</sup></i>
National Report on Schooling in Australia	Reports Australia's progress towards national education objectives	<ul style="list-style-type: none"> <li>• NSSC</li> <li>• National Data Collection</li> </ul>	ACARA (2016h)
NAP reports	Provides a national comparison of student performance against the relevant framework	<ul style="list-style-type: none"> <li>• NAP assessments</li> </ul>	ACARA (2013c)
Schools, Australia	Presents a range of statistics on students in schools across Australia	<ul style="list-style-type: none"> <li>• NSSC</li> </ul>	ABS (2016e)
Report on Government Services	Reports on equity and effectiveness of government services, including school education, in Australia	<ul style="list-style-type: none"> <li>• NSSC</li> <li>• National Data Collection</li> <li>• NAP assessments</li> </ul>	SCRGSP (2016b)
Australian Institute of Teaching and School Leadership (AITSL) Initial Teacher Education Data Report	Reports on teacher quality and direction of initial teacher education in Australia	<ul style="list-style-type: none"> <li>• Higher Education Statistics Collection</li> <li>• Staff in Australia's Schools Survey</li> </ul>	AITSL (2015b)

<sup>a</sup> National School Statistics Collection (NSSC); National Assessment Program (NAP). <sup>b</sup> Australian Curriculum, Assessment and Reporting Authority (ACARA); Australian Institute for Teaching and School Leadership (AITSL); Steering Committee for the Review of Government Service Provision (SCRGSP).

## Regular reporting to parents

In ECEC, reporting to parents includes reports or statements on child achievement. For example, although generally not compulsory, several jurisdictions — New South Wales, Victoria<sup>32</sup>, Queensland and South Australia — encourage the use of a *Transition to School Statement* (NSWDET 2015; QldDET 2015b; VicDET 2016d) or a *Progress Report* (SADECS 2016b), when a child is transitioning from preschool to the foundation year of primary school. The purpose of the statement or report is to provide information to parents and would-be teachers of a child to help plan for the child's learning development when they start school. Reporting to parents also consists of results of any formal assessments carried out — for example the *Kindergarten Development Check* (table C.1).

Schools provide parents with student reports at least twice a year that outline student progress (mandated by the *Australian Education Act 2013*). Schools might also hold parent-teacher interviews and communicate results of classroom-based standardised assessments, such as the *Progressive Achievement Tests*. Also, all students who participate in NAPLAN receive an individual report of their results from the Australian Curriculum, Assessment and Reporting Authority that outlines what the student knows and has achieved

<sup>32</sup> Compulsory for all government managed and funded preschool providers.

in the discipline areas tested and how they have performed in relation to others in the same year group, against the national average and national minimum standards (ACARA 2013b).

## Data portals

A number of data portals aggregate, publish and provide access to data to inform the wider community and for research purposes (table C.11).

**Table C.11 A selection of data portals**

<i>Name</i>	<i>Purpose</i>	<i>Data collections used<sup>a</sup></i>
My Child	Allows parents to search for childcare centres and preschools across Australia, and view their vacancy and fee information, and quality ratings against the National Quality Framework	<ul style="list-style-type: none"> <li>• CCMS</li> <li>• NQA ITS</li> </ul>
My School	<ul style="list-style-type: none"> <li>• Provides information on each school's student profile, NAPLAN performance, enrolment numbers, attendance rates, funding levels and sources and other financial information</li> <li>• Helps in understanding how schools with statistically similar backgrounds perform relative to one another and what financial resources are available to each school</li> <li>• Encourages parental engagement in their child's learning</li> </ul>	<ul style="list-style-type: none"> <li>• NAPLAN</li> <li>• National Data Collection</li> </ul>
Victorian Child and Adolescent Monitoring System	Tracks and measures children's and young people's health, wellbeing and safety, learning and development outcomes in Victoria as identified in the <i>Victorian Child and Adolescent Monitoring System Outcomes Framework</i> that includes 35 evidence-based outcomes and 150 indicators across health, wellbeing and safety, learning and development	<ul style="list-style-type: none"> <li>• NAPLAN</li> <li>• AEDC</li> <li>• School Census</li> <li>• Preschool Census</li> <li>• Victorian and National Surveys</li> </ul>
New South Wales Education Datahub <sup>b</sup>	Provides access to various government education datasets (currently over 100) across both ECEC and school education	<ul style="list-style-type: none"> <li>• NAPLAN</li> <li>• National School Statistics Collection</li> <li>• National Data Collection</li> </ul>

<sup>a</sup> Child Care Management System (CCMS); National Quality Agenda IT System (NQA ITS); National Assessment Program — Literacy and Numeracy (NAPLAN); Australian Early Development Census (AEDC). <sup>b</sup> Within the Centre for Education Statistics and Evaluation.

Sources: ACARA (2015c, 2015h); Australian Government (2016); CESE (2016e); VicDET (2016e).

## Evidence repositories — clearinghouses, journals and other resources

Several Australian and international clearinghouses (table C.12) identify, compile and disseminate evidence created through education research.

**Table C.12 A selection of Australian and International education clearinghouses**

<i>Name</i>	<i>Purpose</i>	<i>Managed by/country<sup>a</sup></i>
<b>Australian</b>		
Australian Teaching and Learning Toolkit Initiative	<ul style="list-style-type: none"> <li>• Improve the learning outcomes of students in Australian schools, especially those experiencing disadvantage</li> <li>• Provide funding for research into Australian educational practice and share the evidence via a free online toolkit</li> <li>• Toolkit summarises research (including international) into 34 interventions to improve students' academic achievement (outline each intervention's average impact on student achievement, the strength of the evidence used to determine that average impact, and the average cost of implementing the intervention)</li> </ul>	<ul style="list-style-type: none"> <li>• EEF</li> <li>• SVA<sup>b</sup></li> </ul>
Professional Learning Clearinghouse	<ul style="list-style-type: none"> <li>• Support teachers and school leaders — across early childhood and school education — to make evidence-based decisions about professional development and teaching strategies in the classroom</li> <li>• Provide teachers and school leaders with access to education research on effective professional and teaching strategies in the classroom</li> </ul>	<ul style="list-style-type: none"> <li>• CESE</li> </ul>
School Leadership eCollection	<ul style="list-style-type: none"> <li>• Support the leadership of school leaders through the collection and dissemination of the latest research, strategies and resources in the field of education</li> </ul>	<ul style="list-style-type: none"> <li>• AITSL<sup>c</sup></li> </ul>
Closing the Gap Clearinghouse	<ul style="list-style-type: none"> <li>• Provide an evidence base for overcoming Indigenous disadvantage by providing quality assessed research on what works to improve current and future policies</li> </ul>	<ul style="list-style-type: none"> <li>• AIHW</li> <li>• AIFS</li> </ul>
<b>International</b>		
What Works Clearinghouse <sup>d</sup>	<ul style="list-style-type: none"> <li>• Provide information to researchers, educators and policy makers about strategies for improving education outcomes for students.</li> <li>• Identify studies (through critical assessments) that offer credible and reliable evidence of the effectiveness of a given practice or initiative and disseminate the information on its website</li> </ul>	<ul style="list-style-type: none"> <li>• US</li> </ul>
Danish Clearinghouse for Educational Research <sup>e</sup>	<ul style="list-style-type: none"> <li>• Compile knowledge regarding good evidence-informed educational practice (early childhood and school education)</li> <li>• Analyse and disseminate knowledge to educators and policy makers to help improve student outcomes</li> </ul>	<ul style="list-style-type: none"> <li>• Denmark</li> </ul>
Education Endowment Foundation <sup>f</sup>	<ul style="list-style-type: none"> <li>• Raise the attainment of students by identifying and funding promising educational innovations that address the needs of students in schools</li> <li>• Provide toolkits pertaining to both early childhood and school education that can be used to improve the attainment of students</li> </ul>	<ul style="list-style-type: none"> <li>• UK</li> </ul>

<sup>a</sup> Social Ventures Australia (SVA); Education Endowment Foundation (EEF); Centre for Education Statistics and Evaluation (CESE); Australian Institute for Teaching and School Leadership (AITSL); Australian Institute of Health and Welfare (AIHW); Australian Institute of Family Studies (AIFS). <sup>b</sup> Funded in partnership with Commonwealth Bank of Australia and developed by the Victorian Department of Education and Training and the Education Endowment Foundation. <sup>c</sup> Developed in collaboration with Education Services Australia. <sup>d</sup> Established in 2002. <sup>e</sup> Established in 2006. <sup>f</sup> Founded in 2011.

Sources: Aarhus University (2016); AIHW (2016b); AITSL (2014d); CESE (2016a); EEF (2016a, 2016b); IES (2016); SVA (2015).

Peer-reviewed journal articles also inform policy, practice and programs. Well-known high-quality peer-reviewed journals include the *Review of Educational Research*, the *American Educational Research Journal* and the *Learning and Instruction Journal*.

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Numerous other resources are available to education decision makers and include:

- the *Cunningham Library* and *National School Improvement Tool* (ACER 2016a, 2016b)
- the *Teacher Toolkit* (AITSL 2016)
- *Effective Practices in Literacy and Numeracy* (CESE 2016b)
- the *Early Childhood Resource Hub* (ESA 2016)
- government approved frameworks and resources such as *Belonging, Being and Becoming: The Early Years Learning Framework for Australia* (DEEWR 2009b) and *Reflect, Respect and Relate: Assessing for Learning and Development in the Early Years using Observations Scales* (SADECS 2010).

A selection of these resources is described in more detail in box C.4.

#### Box C.4      **Selection of other resources**

##### **Cunningham Library**

The *Cunningham Library* or the *Australian Education Index* is a database that consists of more than 200 000 pieces of information relating to educational research, policy and practice. Access is available via subscription from the Australian Council for Educational Research (ACER 2016a). Subjects covered in the *Index* are vast and include early childhood, primary, secondary, Indigenous and teacher education, and teaching (ACER 2016a).

##### **Teacher Toolkit**

The *Teacher Toolkit* — provided by the Australian Institute for Teaching and School Leadership (AITSL) — is a resource that consists of online tools and resources aimed at supporting quality teaching (AITSL 2016). The toolkit is organised into seven categories: classroom practice; collaboration; professional learning; standards; self-assessment and reflection; performance and development; and coaching and mentoring. Each of these seven areas is further disaggregated into separate areas. For example, classroom practice consists of eight different resources, one of which is the *Classroom Practice Continuum*.

The *Classroom Practice Continuum* incorporates the Australian Professional Standards for Teachers and its purpose is to demonstrate what teachers at increasing levels of expertise do in the classroom (AITSL 2014c). The *Continuum* is accompanied by the Looking at Classroom Practice resource guide that is aimed at assisting educators in developing a greater understanding of the nature of expertise and the various observation procedures and guides pertaining to observation (AITSL 2014c).

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