



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

National Education  
Evidence Base

Productivity Commission  
Inquiry Report  
*Overview & Recommendations*

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# OVERVIEW

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## Key points

- Notwithstanding increases in expenditure on education per student over the past decade, national and international assessments of student achievement in Australia thus far 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 education 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, promoting competition between schools and informing resource allocation
  - a ‘bottom-up’ capability that evaluates the effectiveness of education policies, programs and teaching practices, enabling systematic identification of ways to improve student achievement.
- There are much education data collected, imposing a substantial compliance burden across schools and early childhood education and care services. This burden can be reduced by collecting data more cost-effectively and making better use of it.
- Access to, and sharing of, education data would be substantially improved through reforms proposed in the Commission’s draft report on Data Availability and Use.
- Meanwhile, there is also scope to improve sharing of education data for research purposes by changing current administrative processes for collecting some education data.
- There are gaps in existing data collections and work in train should fill many of them.
- But the largest gaps in the national education evidence base relate to evidence, notably:
  - the evaluation of policies, programs and education practices in Australian schools and early childhood education and care services to identify what works best, for whom and in what circumstances
  - building an understanding of how to turn best practice into common practice on the ground, which is as important as evaluating what works best.
- Creating an evidence-based approach to education policy and teaching practices and turning best practice into common practice are also required to drive better value for money and improve the outcomes achievable from any given level of expenditure.
- The Australian, state and territory governments must take a shared and co-operative approach to developing a high-quality and relevant Australian education evidence base. There are already effective arrangements for monitoring and performance reporting. To implement the bottom-up capability, governments should:
  - put in place a National Education Evaluation Agreement that defines the objectives of, and framework for, commissioning and applying evaluative research about what works best
  - assign the Australian Curriculum, Assessment and Reporting Authority (ACARA) as the institution to be responsible for the implementation of the evaluative research framework, which is accountable to, and funded by, all governments
  - specify ACARA’s new 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.

It will take time for reforms to yield improvement in education outcomes, and to date, they are yet to do so. Australian students' performance on national and international student assessments has stalled or, in some cases, declined. Furthermore, Australia is not alone in this regard. Other countries have also increased their investment in education, and emphasised targets, accountability and transparency, with the aim of driving improved outcomes through competition between schools. Similarly, these efforts have not seen commensurate improvement in metrics of student achievement.

Both here and overseas, there is a growing consensus that even though resourcing and an accountability focus are important, by themselves they are insufficient to achieve gains in education outcomes. Creating an evidence-based approach to education policy and teaching practices and turning best practice into common practice are also required to drive better value for money and improve the outcomes achievable from any given level of expenditure. Even small improvements in outcomes for all students from applying evidence to policy making in schools and classrooms would offer significant benefits to Australian families and the economy.

## **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 to inform policy development and improve education outcomes in early childhood and school education. The appropriate level of funding provided by governments and formulae used by governments to fund ECEC and schools are not within the scope of this inquiry.

The Commission has set out a framework for how to improve Australia's evidence-based education capability and embed evidence-based decision making in education policies, programs and teaching practices. The Commission has not reviewed the education

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evidence base itself. Judgements based on evidence about ‘what works best’ in education practice are also beyond the scope of this inquiry, but the Commission does use examples to illustrate the framework.

Specifically, the Commission has assessed and made recommendations about: the information required to create 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.

## **What is a national education evidence base?**

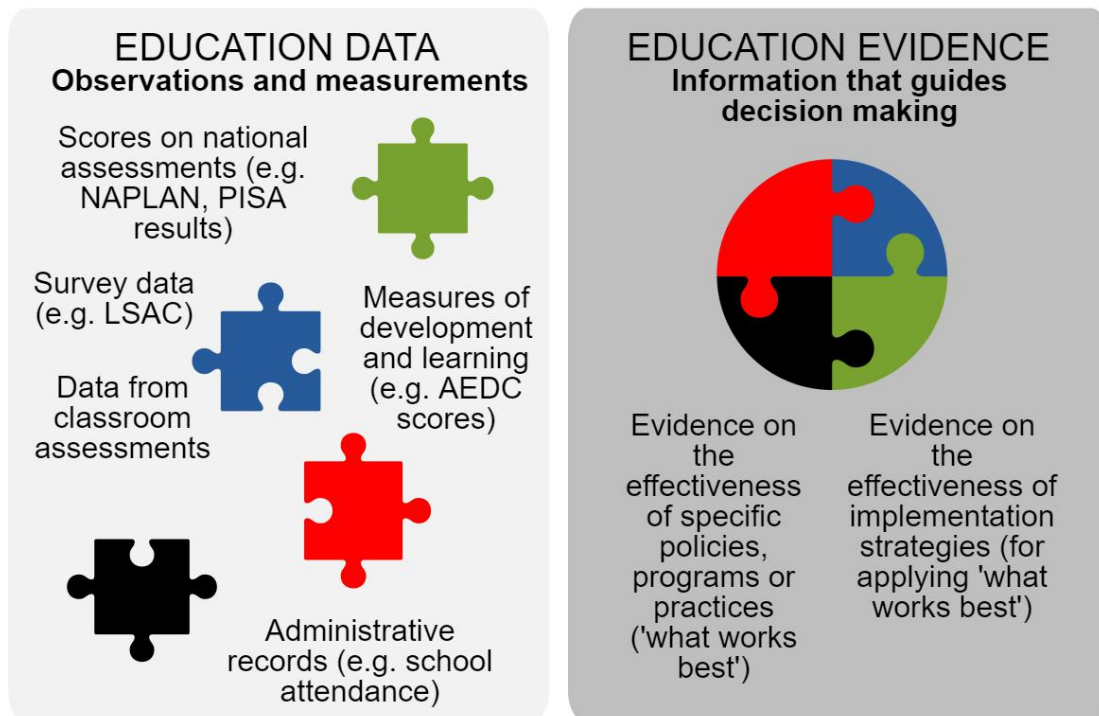
A national education evidence base supports the monitoring of progress against education objectives, the identification and diagnosis of problem areas, and the development of ways to improve ECEC and school education outcomes. It is also essential for promoting transparency and accountability by those 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 1). It should support decision makers at all levels of the education system (national, jurisdictional, schools and ECEC services, teachers, families and communities) to make evidence-informed choices. The overarching policy objective is to improve education outcomes in a cost-effective manner.



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Figure 1 **Distinguishing between data and evidence**



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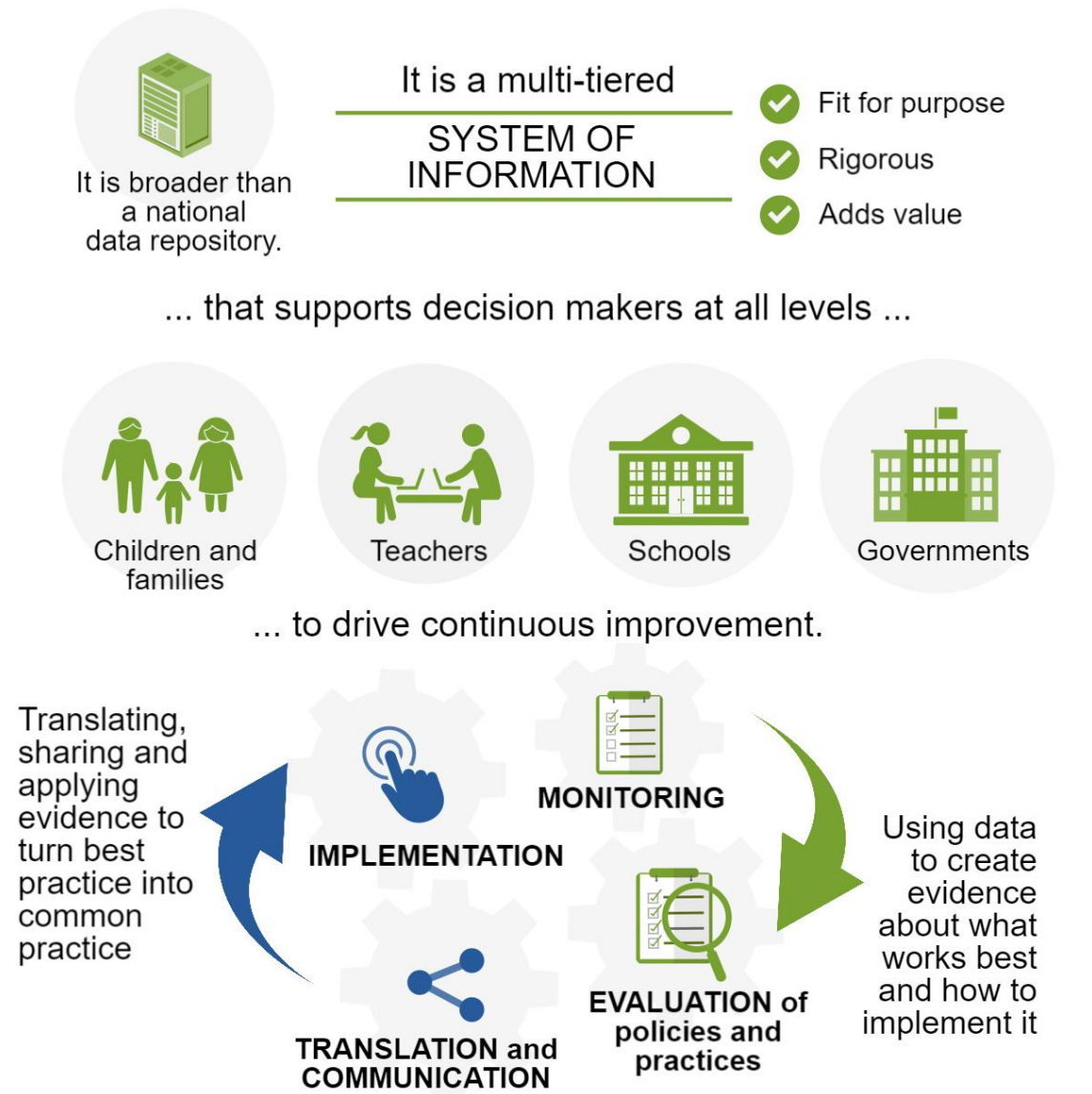
## A framework for furthering the education evidence base

The Commission's framework for assessing the requirements for a national education evidence base is outlined in figure 2.

In supporting the further development of a national education evidence base capability, 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, the translation and dissemination of evidence, and its application by educators and policy makers
- generate benefits in excess of the costs incurred in collecting and processing data and in creating, sharing and applying evidence.

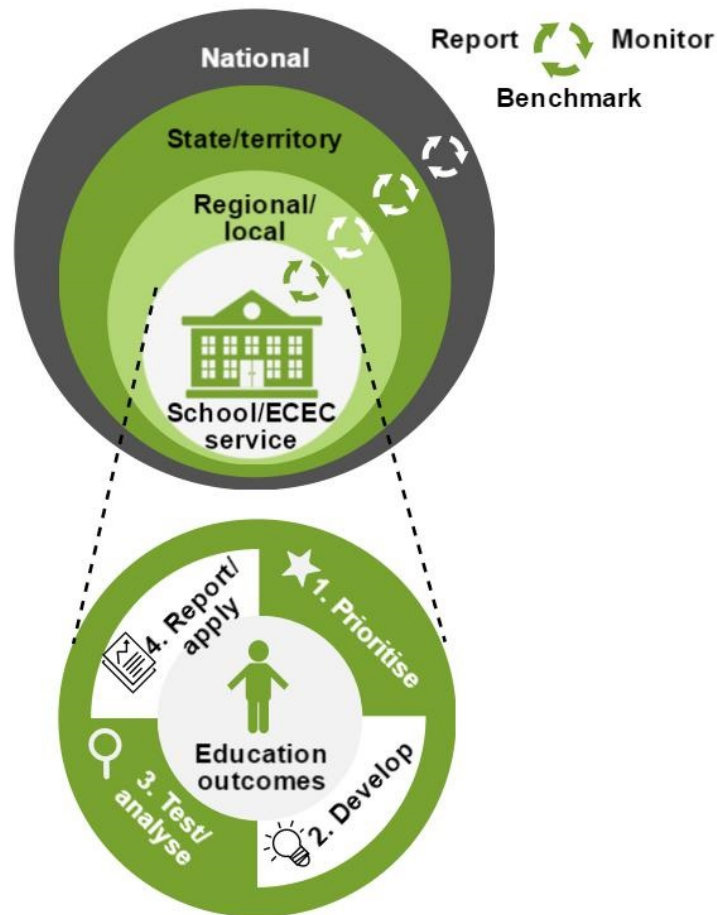
Figure 2 **What is an effective national education evidence base?**



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 3).

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Figure 3 **Top-down and bottom-up approaches should work together**



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Monitoring and benchmarking can promote transparency and accountability about how the education system has performed in light of the resources invested in it, reveal where weaknesses in the education system lie and 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 assess robustly the efficacy and cost-effectiveness of policy interventions, school programs, or teaching practices. That is, monitoring complements, and is a precursor to, effective evaluation and implementation.

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.

Evaluation plays a crucial role in identifying which teaching practices and school programs are the most effective and offer the best value for money. This requires creating

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high-quality evidence on what works and what does not work to improve education outcomes.

It is also necessary to evaluate how best to translate, communicate, and apply the evidence about best practice so that it is adopted and adapted by educators and policy makers. This requires development of guidelines and toolkits for practitioners. It also requires engagement of, and partnerships with, educators to turn best practice into common practice.

## **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 education data**

Data linkage is a key area in which greater value could be drawn from existing education 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. For example, there are sizable benefits from linking ECEC data with *National Assessment Program — Literacy and Numeracy* (NAPLAN) data to facilitate research into the impact of ECEC participation and service quality on student achievement in school.

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 among data custodians and ethics approval committees. This culture adds considerably to time delays and the cost involved in gaining access to data, and prevents some research proposals from proceeding.

The Commission is currently working on a separate inquiry into *Data Availability and Use* and has released a draft report. The Commission has concluded that the current frameworks and protections for data collection and use are broken and in need of major reform. The draft recommendations in that report are designed to improve access to and

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use of data more generally and would also address the impediments to data linkage and data sharing identified in this report.

The recommendations in this report, although narrower in scope, are consistent with the recommendations in the *Data Availability and Use* draft report. Some recommendations in this report would become redundant under the proposals in the other report. However, they do provide an opportunity to improve data collection and sharing for education research within the existing legislative framework.

It is highly desirable that linked education data sets are retained by a trusted linking authority, rather than destroyed. The *Data Availability and Use* inquiry has proposed a broad and far reaching approach that would, if implemented, also make this possible.

Developments in information technology can also play a role here. For example, the Sax Institute has developed the *Secure Unified Research Environment*, which is a remote-access data research laboratory for analysing routinely collected data. The facility allows researchers to log in remotely and securely analyse data from sources such as hospitals, general practices and cancer registries. Such systems provide researchers with access to data while preventing the disclosure of personal or confidential data. For authorised researchers with ethics approval, access can be gained to identified data.

## **Privacy provisions should be harmonised**

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 those 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 unlock the latent value of existing data while respecting the goals of privacy legislation and arrangements.

Differences in the provisions of Commonwealth, state and territory privacy Acts, education Acts and other legislation impose tight 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 shared, or prohibit disclosure of component cohorts of the same dataset. For example, provisions under family assistance law constrain the dissemination of identified childcare data.

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 regulatory complexity. The Australian and ACT Governments should extend available exceptions to privacy laws to cover public interest research purposes generally. Western Australia and South Australia

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do not have a legislated privacy regime. These jurisdictions should ensure that their privacy arrangements reflect a similar public interest research exception.

### **For now, obtaining prior consent could facilitate greater access to data**

ECEC and school administrative data have often been collected without consent to share or use personal information for a purpose beyond that for which the data were collected. 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 for each ECEC child or school student at a later date. The absence of consent makes it challenging to bring datasets together for education research.

The approach to data access and use set out in the Commission's Data Availability and Use draft report would address this issue.

Meanwhile, greater use should be made of existing mechanisms available to share personal information to facilitate education research. ECEC service providers and schools should incorporate formal consent and notification to individuals about use of their personal information for education research at the point of data collection.

Advances in technology also offer the potential to reduce the time and cost of seeking consent to use data for education research.

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

Privacy laws do not apply to de-identified or anonymised data, 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 an agreement between the data custodian and the trusted user that would proscribe such activity. Therefore, governments should introduce clear policy guidelines that give explicit permission to data custodians to release de-identified data to trusted users. Further, de-identified datasets with extremely low risk of re-identification should be publicly available. 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.

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 research approval processes. Often it is necessary to obtain approval from more than one ethics committee before a research

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project can proceed. 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 mutual recognition of approval decisions, in this case by ethics committees, would make the process of accessing education data faster and less costly.

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

There is often limited information available to researchers about the existence and contents (data items) of education datasets. Consequently, researchers often have difficulty determining whether there are data collections that would fit their data requirements.

One way to address this matter is through the creation of a single online register of education data collections and their associated metadata. An online register 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. This would contribute to the value of education data being realised.

A register need not be a costly exercise. Data custodians have information about the content and characteristics of their data. This should be attached to the register. In some cases the metadata may not be well documented, and there would be costs to data custodians in creating information suitable for publication. But there would also be benefits if better documentation improved custodians' abilities to use the data.

There would be advantages to the register including datasets from other sectors, for example, datasets about child health and the environments in which children live.

### **A unique national school student identifier has merit**

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, many jurisdictions use different identifiers across sectors of their education systems. Only Victoria and the ACT use a unique identifier across government and non-government schools (ECEC is not covered).

The introduction of a nationally consistent system of unique student identifiers would offer significant benefits to schools, teachers and families as well as supporting data linkage for education research purposes. A national identifier would enable tracking of individual student outcomes over time, across jurisdictions and between government and non-government schools. Having access to students' historical academic and administrative records would make it easier and more efficient for schools and teachers to prepare programs and strategies that support students' individual learning needs. It would also enable families to have ongoing records of their children's NAPLAN and other outcomes in a way that illustrates their children's learning progress over time. For researchers, unique student identifiers would provide a straightforward way of accessing

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longitudinal data on students' outcomes and other personal information (such as disability status), which can form an essential 'backbone' of data for conducting evaluations of the impact of specific programs and interventions.

However, implementing unique student identifiers across school systems is costly. To minimise these costs, the introduction of a nationally consistent system of student identifiers should be phased in gradually and build upon jurisdictions', schools' and school systems' existing student identification management systems.

The value of a national identifier would be higher if it covered children in ECEC because it would facilitate the sharing and linking of data from the ECEC and school systems. However, the costs would also be larger because both the ECEC system and the implementation issues are more complex.

The establishment of a child identifier for ECEC should remain a long-term goal. The way forward on extending a unique identifier into early childhood should be informed by the experience in developing and implementing nationally consistent school student identifiers.

## **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, such as schools, ECEC providers, educators 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. These costs could be reduced.

### **Census and survey data should be used on a fit for purpose basis**

Some data have to be collected on a census (whole of population) basis to be fit for purpose — for example, where a school funding allocation model is based on data about the individual attributes of students, or where student achievement tests are used to check progress against national goals.

However, it is not always necessary to have data on the full population to create robust and informative evidence. Surveys (data collections on samples of the population) can significantly increase the breadth of information collected, creating data resources that are fit for research purposes that require richer detail. For example, to analyse the role and impact of parental engagement on the education outcomes of students, researchers might need specific and detailed information on aspects of the home learning environment. The costs of collecting data through a survey are much lower than the costs of collecting equivalent data through a census. And the costs of a survey can be reduced by linking to census data where it is fit for purpose, thereby reducing duplication of data collection.



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## 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. A national unique student identifier could reduce duplication by making it easier to link to existing data rather than collecting the same data on more than one occasion.

## 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.

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 assessed using a principled approach**

Many education data collections have characteristics that might be construed as quality issues, such as timeliness of release or the accuracy with which concepts are measured. For example, comparability and consistency issues are frequently raised about ECEC data. Decisions about whether to address a potential data quality issue should be guided by the following principles.

- Is the existing quality of data 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. For example, there is little that schools can do to correct the gaps and errors in self-reported data provided by parents about their education and occupation.
- 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.

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- 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, and help identify students needing intervention in the early years of school
- measures of students' non-cognitive capabilities, wellbeing and engagement, which would reveal progress in the development of students' social and emotional skills
- nationally consistent data for students with disability, including appropriate measures of outcomes, would help educators support these students.

In addition, improved education 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 embed measures of personal and social capability within existing assessments 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* is expected to become part of a continuous process for supporting 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.

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

Linking of existing (and new) national data collections can support valuable research. However, some questions are more effectively addressed using more detailed and qualitative data about students. The *Longitudinal Study of Australian Children* (LSAC) and the *Longitudinal Study of Indigenous Children* (LSIC) (started in 2004 and 2008, respectively) have yielded insights into children's outcomes that cannot be obtained from administrative data alone. 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 LSAC to support ongoing analysis of children's outcomes. Fit for purpose administrative data should be linked to these longitudinal survey data to reduce the cost and expand the usefulness of the survey.

The design of the new longitudinal cohort should also build upon lessons learnt from the use of the original LSAC and LSIC surveys. For example, it might be appropriate to oversample Indigenous children and other disadvantaged groups in LSAC to enable more robust and representative analysis of key issues relating specifically to Indigenous or disadvantaged groups.

### **Information about external influences**

Education outcomes are affected by influences that the education system cannot directly manage, for example, a child's gender, 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 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 of Population and Housing*. Where such data are fit for purpose, improved data linkage processes will suffice, leveraging the value of existing collections. An example is a study using linked LSAC and NAPLAN data, which found that a positive early home learning environment (as measured when a child is aged 2–3 years) improves children's later achievement in Year 3 reading and numeracy tests, by an amount equivalent to between two and four months of schooling in Year 3.

However, there remain some significant gaps. Data are lacking, for example, on some aspects of parental engagement 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.

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## 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 (in terms of both days and hours) 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 awaiting support from the Australian Government. A recent data linkage initiative by the ABS could also contribute to the Australian evidence base on ECEC. It is further developed and is used more widely by researchers.

### Value-added measures of education outcomes

Point-in-time measures of student achievement, captured in 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 growth in student learning attributable to a school. This is the growth in a student's learning, over and above that expected given the backgrounds and prior levels of achievement of students within the school.

Value-added measures are useful for further analysis of school performance and identifying schools that are consistently improving the achievement of their students over time compared with other schools having similar student and school characteristics. Looking under the bonnet of such schools is a useful starting point to gather preliminary evidence about whether they have implemented programs and practices that have potential to improve education outcomes in other schools.

Use of these measures is in its infancy in Australia.

### 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.

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Questions like ‘will the approach adopted in this successful school have a similar impact on student outcomes in other schools?’, ‘what effect does this program have on student outcomes?’, ‘what approaches to engaging parents have the largest impact on their children’s outcomes?’, and ‘which teaching practices will have the largest effect on the achievement of all students in my class irrespective of their individual current level of achievement?’ are about the impact or effect of initiatives. High-quality and rigorous assessment of questions like these typically requires a bottom-up approach, using small scale research projects and datasets that are often question-specific and apply sophisticated quantitative 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.

The impact of an initiative on student outcomes or the effect of an implementation strategy can then be tested using appropriate, high-quality, research techniques. Amongst the gold standard techniques are meta-analyses of randomised controlled trials and individual trials. Such approaches are widely used in health research, but are not routinely 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 controlled 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.

However, meta-analyses and randomised controlled trials are not always the best methods. The choice of research methods should be based on assessment of which method is most fit for the research purpose. Furthermore, analysis of the impact of an initiative or the effect of an implementation strategy should be accompanied by analysis of why and how it works, to

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shed light on for whom, and under what circumstances, the initiative works. Process evaluations, run in parallel with trials, are an approach to gathering this valuable information.

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

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

Co-operative policy leadership is important

Implementation of high-quality research requires co-operative policy leadership by the Australian, state and territory governments. COAG has already recognised the need for co-operative 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. Although governments do facilitate some of this type of research, it is insufficient and is often not conducted using rigorous evaluations, subject to independent review nor shared openly.

### **Strategically-guided evaluative 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 that the findings of VET research support stakeholders in the VET system to make better decisions, and thereby improve the quality and effectiveness of training. Research funding allocations are still guided by national research priorities. Similarly, in housing, research priorities guide the research program administered by the government-funded Australian Housing and Urban Research Institute.

National priorities for ECEC and school research that emphasise research on what works best, for whom and in what circumstances should be developed (evaluative research). This type of research would include evaluation of ways to improve the adoption and adaptation of the evidence in ECEC services, schools and classrooms. That is, research is also needed to evaluate how to turn best practice into common practice in ECEC and schools.

This strategically-guided research would not displace education research undertaken through other channels. Rather, it would complement that research and focus effort directly on meeting the need of governments and the education system to build an Australian evidence base about what does and what does not work.

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## 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. Process evaluations that assess how and why an initiative is or is not successful should also be commissioned.

## 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, publication of all outputs to enable scrutiny and debate (irrespective of findings), 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 through adoption of a staged process including pilot, efficacy and effectiveness trials. It is equally important to know which programs and practices are demonstrated to be ineffective. Classroom and educator time is precious. It is important that things that do not work make way for things that do. For this reason, it is essential that all research findings are completely open and transparent.

## 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 and include a focus on how researchers, policy makers, ECEC services, schools and educators can work constructively and in partnership to evaluate what works best. Without the positive and active engagement of school systems, education providers, ECEC service managers, principals and educators, there is a high risk that research will fail to make a difference to outcomes in ECEC services, schools and classrooms, and ultimately fail to contribute to an improvement in national outcomes.

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## **Action is required to take high-quality evidence and implement it as practice**

### **Evidence must influence practice**

Simply creating evidence about what works best is not enough. Building understanding of how best to go about implementing best practice on the ground is as important as evaluating what works best.

Evidence only leads to improved education outcomes if it is influential in changing the behaviour of decision makers. Educators need to know how they can adopt and adapt the evidence into their practices.

Research is also needed into how best to improve the use of evidence by policy makers.

Internationally, concerns that evidence does not sufficiently impact decision making have prompted research on how to mobilise knowledge and translate evidence into policy and practice. The UK Education Endowment Foundation is funding research into ways to engage and support schools in their adoption and adaptation of the effective practices identified in the UK evidence base on what works. 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.

Partnerships with research institutions, schools and the teaching professions play an important role in this process. It is important to get buy-in and ownership from schools and educators.

Research into understanding how to translate what works best into best practice in ECEC services, schools and classrooms is likely to have widespread implications for the way researchers communicate their findings, the way educators are trained (including through professional development), and how education policy is designed. It will also help ensure that spending on both education and education research is delivering value for money.

### **Research findings must be translated and communicated effectively**

In order for research to have an impact on decision makers in the education system, findings have to be translated 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 (such as guidelines and toolkits) to support practitioners in adopting and adapting the information into their practices, 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



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different interventions and practice guides. The *Teaching and Learning Toolkit*, supported by Social Ventures Australia, is a recent example of a move in this direction in Australia.

## **Effecting change will take time**

It will take time to identify research priorities, commission and complete evaluation projects, translate and communicate research findings and turn best practice into common practice. And it will take a further period of time before the impacts become apparent in nationally reported outcomes — a period significantly longer than the cycles of typical education funding agreements.

## **Governance and institutional arrangements**

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 of an effective education evidence base.

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 below relates to the bottom-up approach. Effective arrangements for the top-down approach in school education, undertaken by the Australian Curriculum, Assessment and Reporting Authority (ACARA), are already in place.

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

### **A National Education Evaluation Agreement is needed**

In Australia's federated system, the funding and delivery of education services (both ECEC and school) are dispersed between the tiers of government. In this fragmented operating environment it is important that all governments commit to implementation to get the maximum benefits from the bottom-up approach. This should be demonstrated through creation of a *National Education Evaluation Agreement*.

This Agreement would be in addition to, and separate from, existing agreements. Policy makers, researchers, and educators should view the bottom-up approach through the lens of how to go about improving outcomes rather than through the top-down perspective of informing judgements about their performance. In this way, incentives are created for all stakeholders to embrace and engage with the evidence-based approach. Therefore, it is desirable to decouple the implementation of the bottom-up approach from the focus on performance monitoring, benchmarking, and accountability (top-down approach).

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In establishing the Agreement, governments should apply principles of good governance by:

- setting clear policy objectives
- providing policy guidelines and defining the functions of the entity responsible for delivering on the national education evidence base framework
- ensuring that all parties have clearly defined roles and a clear understanding of their responsibilities, and operate in an open and transparent manner
- ensuring the entity has resourcing and capability to carry out its functions effectively.

### *Functions of the National Education Evaluation Agreement*

The Agreement should provide explicit policy direction in defining the:

- objectives of the Agreement
- nature of the research to be undertaken in the bottom-up evaluation of what works and what does not work, including research on the best implementation strategies, process evaluation and assessment of cost-effectiveness
- evidentiary standards or frameworks to be applied, and quality verification processes
- imperative to ensure effective translation and communication of evidence (including the existing stock of high-quality evidence), and its practical application, including through guidelines accessible to practitioners.

## **An institution to deliver the bottom-up approach**

### Functions of the institution

An institution should be assigned responsibility for performing the functions needed to deliver on the bottom-up approach. The institution should be responsible for the following five activities:

- development of research priorities
- commissioning of high-quality education research
- adoption of rigorous research quality control processes
- development of researcher capacity
- translation, communication and implementation of high-quality evidence.

In addition, the institution should be responsible for:

- promoting a culture among policy makers and educators of applying the evidence base
- establishing co-operative partnerships between research institutes, schools and ECEC providers, and educators, as a means to achieve engagement and buy-in

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- establishing co-operative partnerships with private philanthropic organisations, both in Australia and overseas, to leverage the growing interest and support for generating and applying high-quality evidence in education
  - keeping researchers informed about potentially useful administrative and research datasets.

The institution would not do research on its own account.

The Australian, state and territory governments would collectively own and resource the institution, ensuring that it has the capability to undertake its functions. But, to deliver on its functions, there is a strong case for the institution to be at arms' length from government departments responsible for ECEC services and schools.

In considering which institution would best perform the functions set out above, the Commission has considered three options: ACARA; the Australian Institute for Teaching and School Leadership (AITSL); and a new, privately run institution created through a competitive tender process, similar to the way in which the UK Education Endowment Foundation was established.

### Assessment of options for housing the institution

The Commission has not undertaken a detailed analysis of the three options, but rather has assessed each potential home for the institution against characteristics desirable for the institution to have (table 1).

On this assessment, the private entity has a clear advantage over both ACARA and AITSL in terms of being able to leverage funding from philanthropic and corporate sponsors, but it compares either equally well or less favourably against the other characteristics. In particular, ACARA and AITSL have an advantage over the private entity in the critical areas of accountability to the Education Council. ACARA has an advantage over both AITSL and the private entity in terms of the costs relating to establishing the institution.

AITSL has similar strengths and weaknesses to ACARA, except that it is currently a company owned by the Australian Government and would require more complex legislative changes to convert it into an authority like ACARA, which is owned by the Education Council. ACARA has proven to be a successful model for governments in implementing the top-down approach, and this can be built upon in implementing the bottom-up approach.

On balance, the Commission considers the best starting point for delivery on the bottom-up approach is to embed the institution within ACARA.

**Table 1 Assessment of ACARA, AITSL and a private entity against desirable characteristics for the institution**

<i>Desirable characteristics [ideal rating]</i>	<i>ACARA</i>	<i>AITSL</i>	<i>Private entity</i>
Degree of independence in day-to-day operations from the Education Council [high]	high	high	high
Degree of accountability to the Education Council [high]	high	high	medium
Degree of openness and transparency [high]	high	high	high
Scope to raise direct funding (donations) from private philanthropic and corporate sponsors [high]	low	low	high
Scope to leverage external funding for individual evaluation projects [high]	medium	medium	medium
Capacity to enter into partnerships with government organisations, schools, ECEC service providers, educators and research institutes [high]	high	high	high
Cost of establishing the institutional setup [low]	low	medium	medium
Ongoing cost of operating the institution [low]	medium	medium	medium
Scope to manage risks arising from conflicts of interest between the existing and new functions of the organisation [high]	medium	medium	not applicable

## Governance arrangements for ACARA

There are a number of implementation issues that need attention in assigning the new functions to ACARA.

There may be a potential or perceived conflict of interest with ACARA’s existing functions. For example, a bottom-up evaluation could raise questions about an aspect of ACARA’s top-down functions. Furthermore, stakeholders might perceive that the top-down and bottom-up approaches have not been decoupled and could be less willing to engage with ACARA on one or both of them.

To deal with these issues there should be structural separation between the bottom-up and top-down functions. Separate divisions should be responsible for each approach.

The Commission recommends the following governance arrangements.

- The new bottom-up division would have its own independent board and chairperson, with board members appointed by the Education Council through a transparent selection process, and in their own right, not in a representative capacity. The CEO of ACARA could be an ex-officio member of both boards.
- A charter and letter of expectation from the Education Council — to set strategic directions and provide guidance about the activities that the new division of ACARA is expected to undertake.

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- The Education Council would have veto power in the selection of research projects, but would use this in an open and transparent way (such as in writing).
  - To strengthen the independence of the board and to improve transparency, the board members would not include public servants from education and ECEC departments, nor serving officers from the non-government education sectors. Consultation with stakeholders would be facilitated through the establishment of formal advisory bodies which would also include representatives of other groups, including schools, ECEC services, educators, parents and researchers.
  - The Education Council would commission a review of the bottom-up arrangements by an independent reviewer every five years.

ACARA would provide the back office functions for the new activities, leveraging economies of scale. There would also be synergies from being able to move staff flexibly between the two divisions of the institution.

Changes to ACARA's functions would need to be legislated through changes to its Act.

### Funding the bottom-up approach

The cost of implementing the bottom-up approach is expected to be met from within the existing education budget envelope (and funded by all governments). The Commission anticipates that the cost will be small, relative to the recurrent education budget.

Governments should commit to funding the bottom-up approach for at least ten years. This commitment would enable ACARA to work with some certainty in implementing the bottom-up approach, in developing partnerships with other institutions and in commissioning research that is long-term in nature. It would also enable time for the impacts of efforts to implement best practice to emerge. ACARA's capacity to work with certainty would be even stronger if funding was provided as an upfront endowment.



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# Recommendations and findings

## FINDING 1.1

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

## 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, translation and communication of evidence, and practical 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.

## FINDING 2.1

National level data play a key role in top-down monitoring, benchmarking and accountability processes, but alone are insufficient to achieve improved outcomes. They need to be complemented by a bottom-up approach that generates, translates and communicates evidence about:

- what works best, for whom and in what circumstances
- the most effective strategies for implementing best practice in schools and early childhood education and care services.

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#### RECOMMENDATION 3.1

In assessing whether to improve the quality of existing education data, governments should examine on a case-by-case basis whether:

- the existing quality of the data 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.

#### RECOMMENDATION 3.2

The Australian Government should request and sufficiently fund the agencies that conduct the *Longitudinal Study of Australian Children* to establish new cohorts at regular intervals. The agencies should use opportunities to link with administrative data and draw on the experience gained from use of the original study.

#### FINDING 3.1

There are gaps in existing data collections, but ongoing initiatives should help to fill many of them.

- 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 on a nationally consistent basis.
- 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 and wellbeing.
- The *Nationally Consistent Collection of Data on School Students with Disability* should help teachers and education systems to better support 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.

#### RECOMMENDATION 3.3

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



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#### FINDING 3.2

The two largest gaps in the national education evidence base are evidence about:

- the impact of policies, programs and education practices in Australian schools and early childhood education and care services
- the most effective implementation strategies for turning best practice into common practice.

#### RECOMMENDATION 4.1

The Australian, state and territory governments should prioritise the work of the Data Strategy Group to develop a nationally consistent system of unique student identifiers. In doing so, governments should ensure that the resulting system:

- minimises implementation costs, by building on existing jurisdictional, school and school system student identification management systems and processes, and by taking advantage of scheduled technological upgrades
- proactively manages privacy and data security concerns, including through the preparation of a Privacy Impact Assessment early in the planning process.

Further, the Data Strategy Group should examine and develop feasible ways of extending a unique student identifier to the early childhood education and care sector.

#### RECOMMENDATION 4.2

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

- 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
- using census data collections to maintain a basic national set of student administrative and performance data, and sample data collections to enable more in-depth research and analysis on specific matters
- making maximum use of existing large-scale assessments for research and evaluation purposes by linking sample data to census data where possible.

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FINDING 5.1

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

RECOMMENDATION 5.1

In circumstances where formal consent and notification processes would allow personal information to be used and disclosed for education research, agencies responsible for education data collections should amend their processes for collecting personal information from parents/guardians to incorporate formal consent and notification procedures at the initial point of collection.

RECOMMENDATION 5.2

The Australian Government should amend the *Privacy Act 1998* (Cwlth) to extend the exception relating to the collection, use or disclosure of personal information in the area of health and medical research to cover public interest research more generally.

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 exception for public interest research.

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 to facilitate improved access to data for public interest research.

RECOMMENDATION 5.5

The Australian, state and territory governments should introduce policy guidelines which give explicit permission to data custodians to share data to facilitate public interest research. Those guidelines should include timeframes, conditions for release, criteria for decision making, reasons for decisions and review procedures.

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FINDING 6.1

The system of data linkage would be improved if linked data were retained and a national education master linkage key developed.

RECOMMENDATION 7.1

The Australian, state and territory governments should ensure that a single online register of education data collections and their associated metadata is created.

FINDING 7.1

The value of education evidence will only be realised if it is translated into common practice. Developing the evidence base on how best to support the use of evidence to turn best practice into common practice, is as important as evaluating the impact of policies, programs and practices on student outcomes.

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 early childhood and school education outcomes and to support the use of that evidence. 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
- development of researcher capacity
- translation, communication and implementation of high-quality evidence.

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#### RECOMMENDATION 8.1

The Australian, state and territory governments should task the COAG Education Council to provide explicit policy direction through a *National Education Evaluation Agreement*, which would define the:

- objectives of the agreement
- nature of the research to be undertaken in the bottom-up evaluation of what works and what does not work, including research on the best implementation strategies
- evidentiary standards or frameworks to be applied, including process evaluation and assessment of cost-effectiveness
- requirements for translation and communication of evidence (including implementation strategies).

They should also request the Education Council to:

- assign the Australian Curriculum, Assessment and Reporting Authority (ACARA) to be responsible and accountable for implementation of the functions set out above and in Recommendation 7.2
- specify ACARA's expanded governance arrangements, functions and operations including:
  - responsibility for promoting a culture of using the evidence base by policy makers and educators
  - scope for co-operative partnerships between research institutes, system managers, schools, early childhood education providers and educators
  - scope for co-operative partnerships with private philanthropic organisations, both in Australia and overseas, to leverage the growing interest and support for high-quality work in this area.

The Australian Government should legislate the changes to ACARA's Act.