Chapter 4

# Using data to inform practice

## Key points

- 'Using data to inform practice' refers to the process of leveraging information about student learning or wellbeing to guide decision-making to improve student outcomes.
- Considered use of data can lead to improved student and school outcomes. It is a critical foundation for high expectations, explicit teaching, effective feedback and assessment and underpins the teaching and learning cycle.
- High-quality data from a range of sources is essential for reaching accurate conclusions.
- Data use benefits from a clear purpose and teacher collaboration. Considering the purpose of data helps to inform decisions about whether it should be formally captured.
- An equity-centred approach is important at each step of the data use process to optimise learning and wellbeing for every student.
- Effective professional development linked to data use builds teachers' capacity to gain insights from data to inform teaching.
- Principals and other school leaders play a critical role in facilitating the effective use of data for school improvement.

## What is ‘using data to inform practice’?

‘Using data to inform practice’ in this document refers to the process of leveraging information about student learning or wellbeing to guide decision-making to improve student outcomes. For example, data may be used to:

- identify starting points and next steps for teaching and learning
- monitor and evaluate student learning progress and wellbeing
- guide decisions about adjusting teaching strategies in response to individual student and cohort strengths and needs
- strengthen the effectiveness of feedback teachers give students about their learning
- evaluate the effectiveness of teaching and learning programs
- inform ongoing school improvement efforts.

Data can take many forms and may come from a range of sources, including informal teacher observations, student work samples, surveys and interviews, class tests, on-demand diagnostic assessments, formal assessments and examinations, and student, teacher, parent and community feedback. It may be quantitative or qualitative. **Quantitative** data is information that can be presented as a set of numbers, from which averages, counts, percentages, differences or totals can be created. Quantitative data can be useful to answer questions about ‘how many’ or ‘how much’. **Qualitative** data is information that tends to include thoughts, observations, feelings, opinions and/or experiences. It can be useful to answer questions about ‘what’, ‘how’ and ‘why’ (CESE 2018).

Not all data needs to be formally captured to be informative for decision-making. For example, teachers often use their observations about student learning to make in-the-moment adjustments to teaching and learning. However, teachers may also like to have a quick and efficient way to note when they observe that a student is having difficulty understanding a concept, or when a student demonstrates understanding above or below what was expected in the learning intentions and success criteria.

# What the evidence says

## Why using data to inform practice matters

An increasing number of studies involving large sample sizes and rigorous research designs show that well-informed and intentional use of high-quality data can lead to improved student and school outcomes (for a review, refer to van der Kleij et al. 2023).

The effective use of data is a critical foundation for high expectations, explicit teaching, effective feedback and assessment. It underpins the teaching and learning cycle, where each phase is supported by ongoing monitoring and assessment. Goss et al. (2015) assert that timely access to relevant information about student learning is essential for teachers to target their teaching effectively. This includes:

- access to specific baseline data to establish where each student is starting from and what they are ready to learn next[1]
- frequent feedback to ascertain whether their students are learning what they are trying to teach them
- awareness of when learning has stalled, so that they can take prompt action to get the student back on track.

Teachers also need to monitor learning over time to understand what impact their teaching is having and to ensure that every student is making sufficient progress (Goss et al. 2015; AERO 2024b). However, there is a potential tension between collecting data that informs teaching and learning and collecting data that does not have a clearly defined purpose. School leaders and teachers need to regularly review assessment and other data being collected and use their professional judgement to determine what can be stopped and what needs to continue. They also need to facilitate effective and efficient processes to support teachers to get the data they need.

For these reasons, the ability to understand and use data effectively is considered a critical skill for school leaders and teachers. This is reflected in its inclusion in key frameworks such as the evidence-based aspects of the Australian Professional Standards for Teachers (AITSL 2022) and the NSW School Excellence Framework (NSW Department of Education 2023b), as well as in the Alice Springs (Mparntwe) Education Declaration (2019).

1 Baseline data is information about students' level of learning at the beginning of a new unit of learning. It can be obtained from assessments (for example, pre-assessments or prior years' assessments) or prior evidence of learning, and is used to identify gaps in students' knowledge, set individual learning goals and determine the level of support needed to meet them (RIDE 2006; Goss et al. 2015).

## Using high-quality data and a range of sources is essential for reaching accurate conclusions

While the importance of 'high-quality data' is emphasised in the literature (Yoon 2016; van der Kleij et al. 2023), what 'high-quality data' entails is often not clearly articulated. However, many of the attributes of high-quality assessment (Masters 2013; refer to Chapter 5: Assessment) are applicable to other types of data used to inform practice:

- validity – the data accurately measures the things the teacher is intending to measure
- reliability – it produces stable and consistent results over time and with different learners and teachers
- objectivity – the conclusions drawn are not dependent on the specific type of data used or who analyses it
- inclusiveness – the data does not under or overestimate what is being measured because of student gender, physical ability, cultural background, socioeconomic status or geographical location.

Using a range of data for decision-making is also important. First, using multiple data sources can enhance the validity and reliability of the findings. Referred to as 'data triangulation', this involves confirming, refuting or illuminating findings from an initial data source by analysing other sources of data (Mintz et al. 2013). Second, multiple data sources (for example, informal classroom observations, test scores and in-class work tasks) can be used to provide a more complete picture of student achievement (Datnow and Park 2018). Using multiple data sources can offer insights into why students are (or are not) learning, and the practices and policies that may impact their opportunities to learn. The number of sources used should be kept manageable to ensure the process is not too time-consuming and the focus remains on the most useful data for the intended purpose.

When selecting which sources of data to use, teachers and school leaders should use their professional judgement to identify the most relevant data and facilitate efficient data collection. Wiliam (2014:9) advocates for decision-driven data collection and notes that by starting with the decisions that need to be made, 'we are far more likely to collect the right data, the right amount of data, in the right way, for the need at hand'.

Student voice is recognised in the literature as a valuable source of data to inform classroom and whole-school improvement, and can be gathered through surveys, focus groups or presentations (van der Kleij et al. 2023).[2] Harris et al. (2014) note that student voice can bring fresh perspectives and raise issues of equity and other difficult topics that may go unnoticed or misunderstood by school staff.

2 'Student voice' refers to students actively participating in decision-making at school on things that shape their educational experiences. Student voice is more than just students 'having a say' and 'being heard'. To be successful, schools must value the perspectives and opinions of students and act on them in a way that genuinely shapes learning and decision-making at the school.

Yarning is a culturally inclusive method of soliciting Aboriginal and/or Torres Strait Islander student voices. For more information, refer to NSW Department of Education's (2023c) Student Voice Through Yarning resource.

## Effective data use benefits from a clear purpose and teacher collaboration

A range of studies describe the steps involved in collecting and transforming data. Lai and Schildkamp (2013) summarise them as follows:

- having a **clear purpose** for what data will be collected and why
- **collecting** the **relevant** data
- **analysing** the data (contextualising, categorising, calculating, connecting and/or summarising the data in a way that meets the purpose)
- **interpreting** the data (making sense of what the data means and its implications for future action)
- taking appropriate **action** based on the data.

Research also highlights the benefits of teacher collaboration for the effective use of data (Datnow and Park 2018; Sharratt 2023; van der Kleij et al. 2023). Establishing data teams can potentially reduce isolation and enhance individual teachers' professional growth.[3] For example, Goss et al. (2015) note that teachers who work together can leverage their colleagues' expertise, test their interpretations of the data and enhance the consistency of teacher judgement, thereby enabling them to better identify student needs and tailor their teaching.

However, a range of factors – such as the level of expertise in the group – can potentially impact the success of the collaboration (Datnow and Hubbard 2016). The literature reviewed highlights the importance of ensuring that structures for effective collaboration are in place and that teachers and school leaders are equipped with the requisite skills and knowledge to use data effectively.[4]

3 Data teams consist of teachers and school leaders, who collaboratively analyse data to make informed decisions and solve educational problems at their school (Schildkamp et al. 2019).

4 Best practices for collaboration can differ depending on the school context. Refer to Chapter 8: Collaboration for more information on common principles to consider when engaging in collaboration.

## An equity-centred approach is important at each step of the data collection and transformation process

Datnow and Park (2018) note that while data use can be an important lever to advance educational equity, there is limited literature on how this may occur. Nonetheless, the authors assert the importance of embedding equity as an explicit goal in data use practices – otherwise, data use can inadvertently perpetuate inequity (refer to Dodman et al. 2023; van der Kleij et al. 2023). Key data practices to promote equity include (Datnow and Park 2018; Lasater et al. 2021; Dodman et al. 2023; van der Kleij et al. 2023):

- using data to challenge deficit beliefs instead of confirming assumptions
- employing a continuous improvement focus for data use
- using multiple data sources to inform teaching, which allows for a more complete picture of student learning and more ways to identify student strengths
- carefully examining data on **all** students – not only students who are at risk of not meeting expectations[5]
- promoting shared responsibility among teachers for all students.

5 Careful examination of a student's data does not have to be restricted to numbers. Rather, it can involve examining data in light of the 'full picture' beyond academic achievement (Datnow and Park 2018).

## Using data to support equity and excellence in NSW public education

An equity-centred inquiry approach to data use is essential to support equity and excellence in NSW public education. This involves focusing on equity at **all** stages of the data use process, including the formulation of questions and problems, any data collection and data analysis, and communication of insights. For example, collecting data and orienting discussions to highlight students' strengths helps teachers to maintain high expectations and focus on how to support students to attain the next level of skill or learning. In contrast, only using data to focus on what students **cannot** do can lead to deficit thinking. This, along with other equity-centred data practices, helps support all students to achieve their educational potential.

School leaders can learn more about how to embed equity into school excellence approaches – including principles for using data and equity-centred inquiry – in the forthcoming Equity guide for leaders in schools (🔒staff only). All department staff can learn more about how to embed equity in our work in The Way We Do Policy: Applying an equity lens in education (🔒staff only).

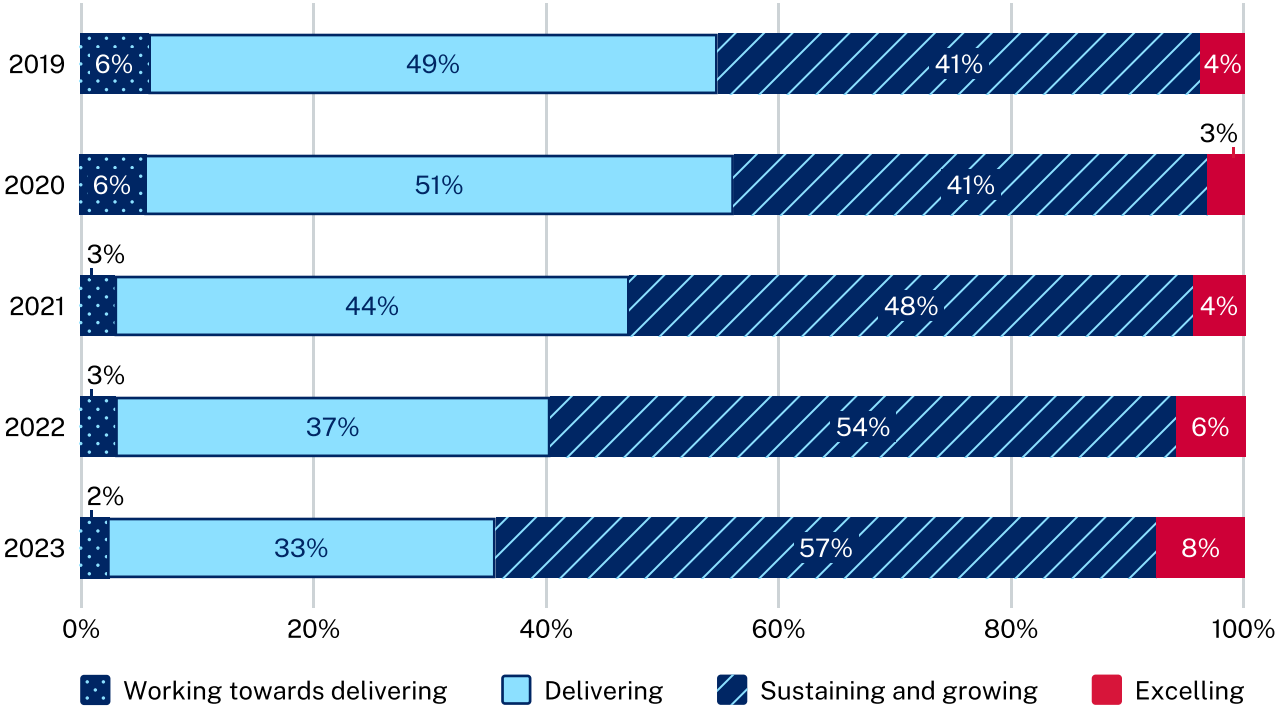
## Professional development linked to data use is most effective when it builds teachers' capacity to leverage insights from data to inform teaching and meet individual students' needs

Despite the expectation that teachers will be proficient at using data to inform their teaching practice, there is evidence to suggest that many teachers feel unprepared to do so (Datnow and Hubbard 2016). Goss et al. (2015:16) observe that 'while Australian schools are awash with data, many do not collect the data they really need, or use the data they do collect effectively'.

The results of recent school self-assessments based on the NSW School Excellence Framework (SEF) show that 'Data skills and use' is one of the least positively rated elements. A comparison of results for 'Data skills and use' over time, however, suggests that this rating may be improving (refer to Figure 4.1).

**Figure 4.1**

**School Excellence Framework self-assessments, 'Data skills and use' element, 2019–2023**




Source: CESE internal analysis of School Excellence Framework self-assessment data.

Research emphasises the importance of professional development to build teachers' capacity to engage with data (Yoon 2016; Jackson 2022; van der Kleij et al. 2023), but the focus of the professional development is important. Datnow and Hubbard (2016) observe that professional development related to data use is often limited to information on how to access a data management system. While it may assist teachers to access data, it does not provide them with support for taking the next steps. Professional learning related to data use should also build teachers' capacity to understand the meaning of the data they are collecting and strengthen their knowledge of teaching strategies to support them to make appropriate data-informed adjustments (Timperley 2009).

## Principals and other school leaders play a critical role in facilitating the effective use of data for school improvement

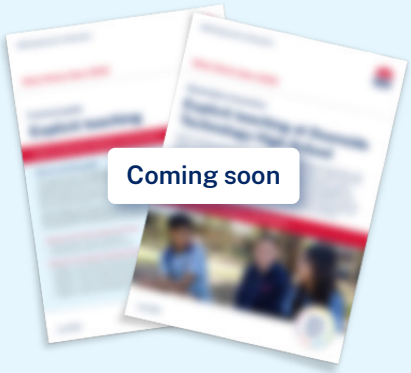
Research highlights the important role of principals and other school leaders in promoting and facilitating data use in schools (Mausethagen et al. 2019; Schildkamp 2019; Jackson 2022; Sharratt 2023). To enable collaboration and collective decision-making, schools can establish data teams – groups of teachers who analyse and interpret the results of assessments and other student data. There can be an overall data team and/or data teams for individual subjects or particular groups of students. For examples of how some high performing schools use data, including through data teams, refer to Hunter et al. (2025).

Schildkamp et al. (2019) identify 5 'building blocks' that school leaders should consider when building effective data teams:

1. **Initiating and identifying a vision, norms and goals:** School leaders, together with teachers in the data team, should develop and discuss a vision, norms and goals for data use in their school.
2. **Providing individualised support:** School leaders should facilitate the use of data and the work of the data team. This can include allocating sufficient time, establishing structures for collaboration and providing professional learning for data use. School leaders should also provide support so that teachers can feel that they can discuss any concerns and frustrations.
3. **Providing intellectual stimulation:** School leaders should actively participate in the data team. They should share and develop knowledge with the team, as well as ensure that teachers have access to data relevant to the problem being addressed. By modelling data use practices, school leaders can encourage teachers to challenge their own beliefs by leading and engaging teachers in discussions about data use. School leaders should also facilitate distributed leadership and ensure that teachers in the data team feel that the team has the autonomy to make 'actual decisions'.
4. **Creating a climate for data use:** School leaders should create an open climate of trust and respect, and stimulate collaboration among teachers. They should emphasise that the focus of data use is for continuous improvement, instead of accountability or 'blaming and shaming'.
5. **Networking/dissemination of knowledge:** School leaders should act as 'boundary crossers' to spread the data team's knowledge and commitment to data use to other colleagues in the school.

Other studies further highlight the need for principals to bolster data literacy in their teachers, and to ensure that teachers have access to data and are directly engaged in its analysis. Jackson (2022), looking at the utility of NAPLAN data, found that access to data resided predominantly with school leaders and that teachers were not given direct access to it, or were only given access after the data had been analysed and interpreted by the school leaders. Without access to and direct engagement with data, teachers may be less likely to use this information to identify the next steps in their teaching (Jackson 2022:153).

## Other What Works Best 2025 resources on using data to inform practice




- What Works Best 2025 practical guide – Using data to inform practice
- What Works Best 2025 illustration of practice – Using data to inform practice at Lucas Gardens School


## This is an extract from the What Works Best 2025 – Evidence guide for excellent schools.

The full evidence guide provides an overview of the evidence that underpins each of the 8 themes: high expectations, explicit teaching, effective feedback, using data to inform practice, assessment, classroom management, wellbeing and collaboration. It also includes the references for the sources cited in this chapter.

For the full suite of What Works Best 2025 resources, including practical guides and illustrations of practice, scan the QR code or visit **education.nsw.gov.au/about-us/education-data-and-research/what-works-best**.

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