



Where research meets practice



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## Data Informed Practice

The effective use of student data can be the impetus for educators to improve learning and wellbeing outcomes, and/or student social and emotional learning. However, simply having data offers very little insight. The value comes from being able to interpret what the data means for individuals, groups and whole classes of students, and then to use it to make decisions about classroom instruction and wellbeing interventions. Data informed practice is the systematic use of a variety of forms and levels of data by educators for this very purpose – improving student learning, classroom practice and overall wellbeing.

## CRITICAL POINTS

- 1** The fundamental purpose of using data in classrooms is to improve teaching and learning, and student wellbeing. Focusing on using high quality and relevant data has the potential to enable this. High quality data is that which is complete, accurate, interpretable, coherent, accessible and timely.
- 2** International studies show that many educators do not feel adequately equipped or confident in using and analysing assessment data. Educators require access to tools, skills and professional learning to support themselves in the effective interpretation and use of data.
- 3** In the classroom, assessment data is essential for informing how educators plan lessons, identify concepts for reteaching, and differentiate instruction. Effective analysis of student data can assist educators to identify areas where student academic and social and emotional learning needs require additional attention.
- 4** When educators are able to collect and effectively analyse data to guide their educational decisions, they become more effective in reviewing students' existing capacities, identifying areas for growth, and developing plans for student improvement. Professional learning can support the development of these capacities.

## IMPLICATIONS FOR EDUCATORS

- 1** When educators have the skills required to interpret and make use of student data effectively, student academic and wellbeing outcomes will improve. Educators, therefore, require support and professional learning to enable them to further develop their data literacy.
- 2** High quality data is produced when high quality assessment practices are employed. These include techniques in assessment *for* learning, assessment *as* learning and assessment *of* learning. It is crucial that educators have a clear understanding of these practices.
- 3** Specific and measurable student achievement goals must be set at the school and classroom level. The more explicit and targeted the goals, the more likely they are to provide focus for data informed decision making.
- 4** Providing dedicated time for educator collaboration to take place is a recommended practice. This can be by way of formalised data teams and/or networks of educators within and across schools, which focus on sharing data and improvement strategies.



## Introduction

In order to deliver effective classroom instruction and meet individual student needs, educators must know their students well. Data that supports the process of knowing each student includes rich information about their academic, social, emotional, behavioural and cultural experiences. Having a well-rounded understanding of each student enables educators to adjust their instruction appropriately.

To do this it is necessary that educators understand which data is most appropriate to engage with when addressing questions about student learning. Only then will the interpretation of the data enable them to pinpoint the action/s that will be most efficacious for the student. Unfortunately various international studies show that many educators do not feel adequately prepared or confident in using assessment data for formative purposes—if at all (Datnow, Park & Wohlstetter, 2007). This may be due, in part, to the fact that schools are at times inundated with data. Another contributing factor is low data literacy—some educators are unable to discern the quality of the data, organise it effectively, consider what it means and use it to make sound educative decisions (Chick & Pierce, 2012; Earl & Katz, 2006). This suggests a need to better support educators in their quest to become skilled in data informed practice.

Data informed practice describes the systematic use of data by schools and educators to improve student learning, specific instruction, classroom practices and overall wellbeing.

## Using data to inform practice

### What is data?

Data can take many forms: words, numbers, images, audio, and so on. Data that is informative for educators may include:

- student achievement data such as student work samples completed in class, educator observational notes of students performance in class, student portfolios, results of formal and informal classroom assessment, student reports or large scale assessment results
- student wellbeing data that captures social-emotional development
- attendance and other administrative data
- contextual data including students' linguistic background, gender, and family information.

In terms of data informed practice, it is important to remember that a key purpose of data is to improve teaching and learning rather than collecting numbers and scores for their own sake. For data to be most useful, it

should be collected systematically and for a clearly identified purpose.

### Using data in schools

Educative decisions informed by quality student data have the potential to improve student achievement and performance (Datnow & Park, 2014; Hattie, 2012; Klenowski, 2011; Datnow, Park & Wohlstetter, 2007). When educators are able to collect and analyse data effectively to guide their educational decisions, they become more effective in reviewing students' existing capacities, identifying areas of growth, and developing plans for their academic, social and emotional improvement. In the classroom, data is essential for informing how educators plan lessons, identify concepts for reteaching, and differentiate instruction (Datnow & Park, 2014).

Good data has the potential to help educators make well informed decisions about students' learning. The first step in this process is ensuring that effective data management and reporting systems are in place: data is collated, stored, analysed and reported effectively at the classroom, year, faculty and whole school levels.

It is essential to use high quality data when making decisions and/or inferences regarding individual students. Data that is of high quality is complete, accurate, interpretable, coherent, accessible and timely. Once the quality of data has been established, using it effectively requires clarity about:

- what the educator needs to understand about their students
- what type of analysis will surface that information
- what data is required to undertake that analysis
- what format the data should be presented in for ease of analysis.

Educators need to be able to solve problems that are pertinent to their practice by using relevant and accessible student data (Datnow, Park & Wohlstetter, 2007). It is important that educators ask targeted and meaningful questions to ensure that their data analysis and use focuses on important areas of student learning and wellbeing outcomes. Without focused questions, the collection, analysis and use of data may be scattered, unclear and pointless.

Schools and educators need to gather multiple types of achievement and instructional data to inform decision-making about classroom practice. Care should be taken to ensure they collect the correct forms of data so as to accurately meet the identified need and/or intended purpose. For example, external high-stakes test results that have a time lag on reporting, such as NAPLAN, are able to indicate the effectiveness of past instructional practices, while student achievement data from classroom



assessments can inform immediate instructional decisions. These uses are specifically matched to particular data types.

Close examination of such data in organised collegial meetings can enable educators to gain a more holistic understanding of individual students.

### Data informed practice

Data informed practice is typically a cyclical process. Whilst educators make use of a variety of models and approaches for interpreting data these invariably cycle through the following phases:

- **plan:** planning of the lesson is informed by data from previous lessons or formative assessments
- **teach:** implementation of the planned lesson occurs
- **assess:** educators use informal or formal assessment strategies to assess student knowledge, understanding and skills
- **analyse:** individually and/or in teams, educators analyse the results to identify areas of student strength and need. Data analysis can help educators pinpoint areas of struggle for individuals, groups or the whole class, and can also reveal areas that students have mastered and therefore require no further instruction
- **pivot:** based on the analysis of student data educators modify their approach, focusing on addressing student needs. This might involve reteaching a concept to the whole class, or targeted teaching of individuals or small groups of students
- **plan:** changes are planned for implementation in the next iteration of teaching, and the cycle continues.



For this to be effective, data must be readily available and accessed in a timely fashion, enabling educators to assess students, analyse understandings and make appropriate changes to instruction in an agile manner.

### Data and assessment

It is essential that high quality assessment practices are employed to enable effective data collection and analysis of student outcomes. To do this, educators need: (1) knowledge of the principles of sound assessment practices, including terminology, development and use of assessment methodologies and techniques, and familiarity with standards of quality in assessment; and (2) the capability to gather dependable information, aggregate and analyse it, and use it to improve teaching and learning for individuals and groups of students. This reinforces the importance of understanding and employing quality assessment practices alongside data informed teaching.

For many educators the term assessment is synonymous with tests, and in many schools the most evident assessment formats are predominantly summative. Summative assessment generally refers to assessment of learning that is undertaken at “defined key points during a unit of work or at the end of a unit, term or semester, and may be used to rank or grade students.” (Board of Studies Teaching and Educational Standards NSW) These assessments are important but are not universally used or consistently employed to improve or inform classroom instruction.

It is essential that assessment also serves a formative function. Formative assessment (or assessment *for* and *as* learning) has a fundamental improvement focus. The “learning power of instructionally oriented classroom assessment” cannot be overstated (Black & Wiliam, 1998). In classrooms, formative assessment refers to frequent, interactive assessments of student progress and understanding in order to identify learning needs and adjust teaching appropriately. Educators who use formative assessment approaches and techniques are better prepared to meet the needs of a diverse student population. They can then effectively make use of the data to differentiate and adapt their instruction, raising levels of student achievement and creating greater equity of student outcomes. Formative assessment does not require a one size fits all approach. Black and Wiliam (1998) state that “*Significant gains can be achieved by different routes, and initiatives here are not likely to fail through neglect of delicate and subtle features.*” (p 62) This highlights the need for educators to develop solid foundations in data literacy and assessment practices.

The fundamental function of educational assessment is the collection of evidence from which interpretations about student’s skill, knowledge and affect can be made— data informed practice. Wiliam (2011) provides five key strategies for improving student learning:

- clarifying, sharing, and understanding learning intentions and criteria for success



- engineering classroom discussions, activities, and tasks that elicit evidence of student achievement
- providing feedback that moves learning forward
- activating students as learning resources for one another
- activating students as owners of their own learning.

### Setting student achievement goals

Establishing meaningful and challenging goals or targets for student performance is central if data informed practice is to make a positive difference. Without tangible student achievement goals at both the classroom and school level, educators and schools are unable to orient their use of data towards improved student learning and wellbeing outcomes (Datnow, Park & Wohlstetter, 2007).

Goal setting might include establishing school-wide goals, year level goals, faculty goals, classroom goals, and individual student goals. For student achievement goals to have impact they must be meaningful to the school context, pertain to both student progress and educator professional responsibility and learning, and must be quantifiable. Schools that set specific and measurable student achievement goals at various levels across the schools are more effective in using data informed practice to support decision making. The more explicit and targeted the goals, the more likely they are to provide clear focus for data informed decision making. Ultimately at all levels, achievement goals should be tied to improving learning and instruction (Datnow & Park, 2014).

### Making better use of data

A focus on supporting educators within schools to become confident and numerate in their use of data is imperative (Chick & Pierce, 2012). Datnow, Park and Wohlstetter (2007) promote four key strategies that can enable educators to make better use of data:

- investing in professional learning
- providing support for educators on how to use data, modelling data use, and data discussions
- providing time for educator collaboration, and
- networking with educators from other schools to share data and improvement strategies.

Collegial data sharing and analysis, in formalised data teams, is a valuable approach schools can employ to support educators' engagement with effective data informed practice. Hattie (2012) conceptualises these teams within a four step model with a repeating cycle:

- collect and chart the data to make it visible
- use the data to prioritise, set, review and revise goals
- review instructional strategies focusing on their impact on student learning, identify changes required, and use the data as indicators to make mid-course adjustments

- monitor the impact of strategies on students, their learning and wellbeing.

### Conclusion

There is little evidence that standardised tests and/or exhaustive summative assessment regimes improve student achievement. However, there is compelling evidence that formative assessment techniques can significantly improve student learning and wellbeing outcomes, particularly when coupled with data informed practice. Therefore, the goal of improving student learning, their overall wellbeing and classroom practice, may be better served with a greater focus on these praxes.

### References

Black, P. & Wiliam, D. (1998). Assessment and classroom learning. *Assessment in Education: Principles, Policy, and Practice*. 5(1), 7-73.

Board of Studies Teaching and Educational Standards NSW. (n.d.) *Assessment for, as and of learning*. Retrieved February 29, 2016 from:

<http://syllabus.bostes.nsw.edu.au/support-materials/assessment-for-as-and-of-learning/>

Chick, H.L. & Pierce, R. (2012) Teaching for statistical literacy: Utilising affordances in real-world data. *International Journal of Science and Mathematics Education*, 10 (2), 339.

Datnow, A. Park, V., & Wohlstetter, P. (2007). *Achieving with Data: How high-performing school systems use data to improve instruction for elementary students*. California: Centre on Educational Governance, University of Southern California.

Datnow, A. & Park, V. (2014). *Data-driven leadership*. San Francisco, California: Jossey-Bass.

Earl, L.M. & Katz, S. (2006) *Leading schools in a data-rich world: Harnessing data for school improvement*. Thousand Oaks: Corwin Press.

Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning*. London: Routledge.

Klenowski, V. (2011) Assessment reform and educational change in Australia. In R.Berry and B. Adamson (Eds) *Assessment reform in Education. Education in the Asia-Pacific Region: Issues, concerns and prospects*.

Wiliam, D. (2011). *Embedded formative assessment*. Bloomington, Solution Tree Press.

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