

# Using PAT data to inform teaching and learning

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## Abstract

Using data to inform teaching and learning has become a common phrase in the education sector. What does 'using data to inform ...' mean and what does it look like in practice? This session delves into this question to illuminate multiple ways that data can be used to inform teaching and learning practice, and to demonstrate this through one school's journey so far. Our presentation is organised by three perspectives – Progress, Champions, and Research. 'Progress' addresses the nature of the suite of PAT assessments and resources, which build upon educational research for direct application in monitoring progress within the classroom context. 'Champions' showcases the way one school has organised its teaching and leadership structures to facilitate exemplary use of the PAT suite of assessments and resources. 'Research' provides a snapshot of how ACER focuses on the transformation of educational research into classroom practice, to make research more easily applicable in a classroom setting.

## Progress

Educational data allow us to make informed decisions in the classroom. The processes of generating and accessing data have increased but the time and space needed to transform that data into a form that can be used in the classroom remains a key challenge for schools and teachers.

Educational data can be highly qualitative through to highly quantitative, and it can measure or reflect different domains, for example, subject content knowledge, synthesis and application skills, as well as timetable commitments and attendance. Some domains are better assessed qualitatively, some quantitatively, and some a mixture of both. ACER's Progressive Achievement Tests (PAT) are firmly in this mixed-methods category.

PAT assessments measure what students from Foundation to Year 10 know, understand and are capable of across subject domains, and help monitor progress over time. Innovative computer adaptive versions of PAT are also available: these assessments diagnose students' starting points to establish what students are capable of, then challenge them at the appropriate level for effective assessment. Through using PAT assessments over time, teachers can then monitor student progress and, when administered at recommended intervals, results can be used to measure learning growth. PAT assessments are flexible, secure and easy to administer; each assessment can be completed in approximately 45 minutes through a secure online platform. This also means that students can be assessed at a time appropriate to their needs, rather than being driven by external schedules.

ACER works with thousands of Australian schools to set up PAT functionality, assign and administer tests, and to assist teachers to understand and interrogate the resulting test data and act upon findings. To do this, ACER learning consultants discuss and plan all professional learning sessions collaboratively with each school they work with. Consultants ask schools to survey all staff to gauge a starting point for their learning. Like our students in a classroom, teachers also work at vastly different entry points, have varied experiences, and have quite distinct roles based upon learning domains and year-level experiences. Surveys allow for session planning that is relevant for teachers, no matter what their level of understanding or knowledge.

# ACER's Progressive Achievement approach

Professional learning sessions focus on ACER's Progressive Achievement approach. This cyclical approach follows three stages, as shown in Figure 1.

**Figure 1** ACER's Progressive Achievement approach (ACER, 2022)



The three stages of the Progressive Achievement approach are:

## Stage 1: Collecting and using the evidence

Classroom work, quality assessment instruments such as progressive achievement tests, and our own expert knowledge combine to produce a wealth of data that tell stories about students' abilities. These data tell us what students know, understand, and can do at a particular point in time, and what they are ready to learn next.

## Stage 2: Supporting next steps

The evidence and understanding that educators collect informs the next steps in teaching and learning by shaping personal stretch targets for every student. This process needs to be supported by learning resources and targeted support for a) students who are yet to master certain skills, b) students consolidating their current skills, and c) students requiring extension. At the same time, this approach helps develop and strengthen educators' own capabilities and confidence as professionals who effectively use data to identify and meet students' immediate needs.

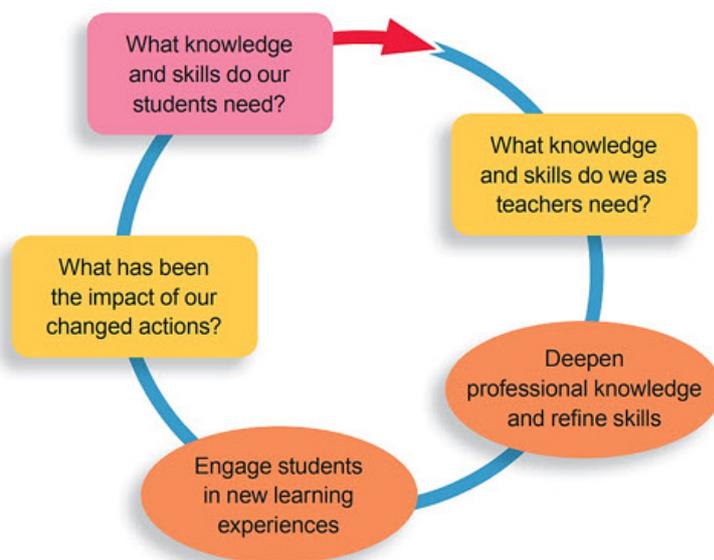
## Stage 3: Tracking student progress

Monitoring student achievement over time is essential in order to see progress. The regular practice of collecting and reflecting upon data, including classroom work, observations, and results from reliable assessment tools continues to build the narrative of every student's learning and therefore track what progress has been made over select periods of time (recommended every 9–12 months for PAT assessments). This tracking also serves as a source of ongoing feedback to students and reporting to parents that supports further progress. A growth mindset approach in assessment, includes 'a belief that, regardless of where students are in their learning at any given time, every student is capable of making further progress' (Masters, 2016a).

## Timperley's cycle of inquiry

ACER consultants also refer to Helen Timperley's 2011 cycle of inquiry and knowledge-building for teacher professional learning (see Figure 2). We incorporate this cycle of inquiry model to assist educators in their day-to-day practices. This model allows teachers to reflect on their teaching and learning and to use evidence when analysing student data.

**Figure 2** Cycle of inquiry (as shown in Timperley, 2011)



The cycle begins by identifying, 'What knowledge and skills do our students need?' This information comes from curriculum documents, but also aligns with Stage 1 Collecting and using the evidence. PAT assessments provide information about what students already know within parts of the curriculum, and which parts might need further attention.

The second dimension of the cycle of inquiry supports and builds upon the first. Teachers are asked to reflect on their own knowledge and skills, their understanding of where their students are in their learning based upon the information collected, and understand that, 'in any given classroom, students are likely to be at very different points in their learning and development' (Masters, 2016b).

The third dimension phase, 'Deepen professional knowledge and refine skills', brings dimensions one and two together. Teachers can identify what will drive their own continued learning through professional learning opportunities – do they feel they have sufficient knowledge to act on the data gathered? Or, would they prefer to improve their skills in certain areas? In the context of PAT, this is where developing data literacy related to adaptive online assessments is critical, as well as how the data collected and interpreted relate to other formative and summative assessment practices, and how the data relate to what happens next in the classroom.

As a result of collecting evidence and engaging with professional learning opportunities, teachers are better supported to engage their students in new experiences; this is the fourth dimension of Timperley's cycle. These new learning experiences are tailored to build upon where students are in their learning and identify next steps in teaching and learning.

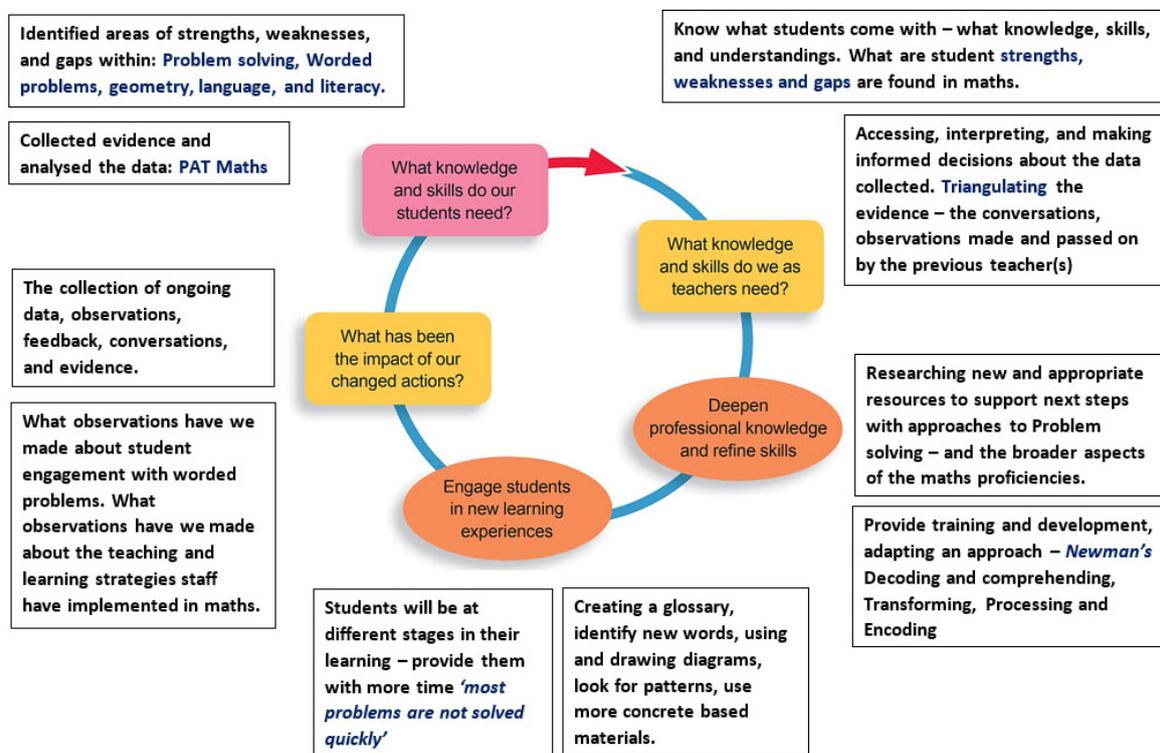
Changes in teachers' beliefs and knowledge through professional learning and development must result in some kind of change to teaching practices (Timperley, 2011, p.18).

The last dimension, 'What has been the impact of our changed actions?', encourages teachers to reflect upon the impact of the changes that have been made to teaching and learning resulting from earlier stages of the inquiry cycle. Surveys are a useful tool in allowing schools to access teacher feedback and to identify professional growth, just as they are for students. Surveys prompt professional reflection and discussion.

PAT linear and adaptive tests measure student knowledge and skills: this helps to identify learning needs and, when used at recommended intervals, demonstrate student progress over time. This can be interpreted as a direct reflection of the teaching and learning actions taken in between tests and can help in revising and replanning strategies for future teaching and learning.

Figure 3 shows how the Progressive Achievement approach (mathematics, in this example) can be aligned with Timperley's cycle of inquiry. It shows how a school might use evidence to support and direct next steps. For example, next steps in teacher professional learning, engaging students in new learning through targeted methodologies, including new or adapted resources, and gauging what impact change has had on the interventions.

**Figure 3** Timperley's cycle of inquiry (2011), aligned with the PAT Mathematics approach



ACER consultants collaborate with schools to build confidence and capacity for all educators to:

- understand terminology and develop data literacies
- understand PAT scales and achievement bands to develop their knowledge of learning progressions within learning domains
- be 'hands-on' and involved in generating, interrogating, and interpreting the data they collect to make informed decisions in their teaching and learning – Achievement Reports, Item Performance Reports and Progress reports all provide the evidence that will inform teaching practices aimed at improving each student's learning outcomes
- be encouraged to work collaboratively in teams, faculty groups, professional learning communities (PLCs), and as a whole school.

## Research

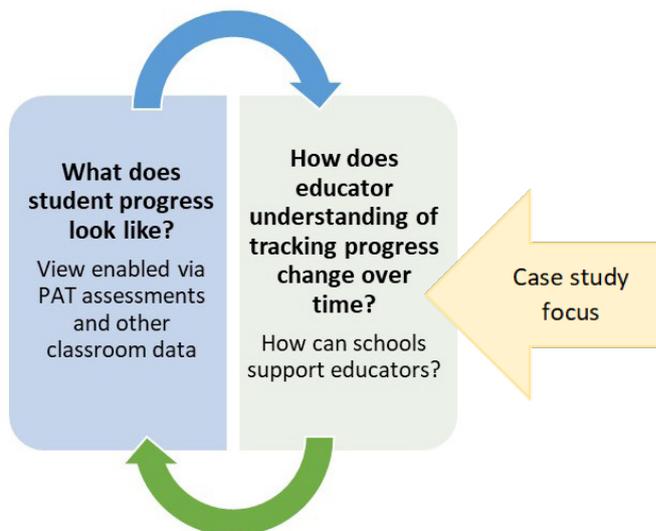
ACER is in the process of conducting case studies at selected schools who are using PAT products to improve their teaching and learning. We are recording these schools' PAT journeys as formalised case studies to share with other schools interested in how PAT assessments, data and resources can be used.

The case studies involve using secondary data from teachers through the surveys used by ACER PAT learning consultants. Primary data are also collected from a small number of teachers at these schools, through planned interviews or other feedback opportunities as they arise through the schools' normal use of ACER PAT products. Interview data collected relate to teachers' understanding of PAT practices, test data collection and use, and educational assessment in general.

We already know that through the use of the PAT suite of resources, student academic progress can be tracked over time. ACER researchers observe schools' practices in tracking student progress over time – a critical element in ACER's Progressive Achievement approach. The case studies also elevate these observations to the educator level (see Figure 4), namely, how educators' understandings of tracking student progress change over time, and what this means for using data in the classroom.

When completed, the case studies will be shared as a text (and potentially video) resource.

**Figure 4** Case study focus



## Champions

Marist College Canberra (MCC) is an independent Catholic school for 1700 boys in Years 4 to 12 and is one of ACER's case study schools. MCC has an embedded culture of academic rigour and high expectations and has the following goal for their students:

Our boys will be challenged intellectually every day and strive to make at least one year of growth every year (Marist College Canberra, 2021, p.8).

To achieve this goal the school has developed the Marist College Learning and Teaching Cycle (Figure 5), which represents their vision of teaching and learning. The cycle includes:

- future planning – 'Where to next?' – that identifies gaps and causes for those gaps
- deepening teachers' professional capacities to address gaps
- curriculum mapping and assessment design
- implementing a whole-school instructional framework
- using data to identify and measure growth and impact.

**Figure 5** Marist College Teaching and Learning Cycle (Barclay & Stakelum, 2022)



MCC has also developed and implemented the Marist Learning Principles, which is a pedagogical framework that complements the Learning and Teaching Cycle (Figure 6). It supports MCC’s teaching and learning vision and reflects their teaching and learning approach. It incorporates six specific teaching and learning approaches:

1. cognition
2. targeted teaching
3. clarifying success
4. vocabulary instruction
5. responsive teaching and questioning
6. feedback

**Figure 6** Marist Learning Principles (Barclay & Stakelum, 2022)



MCC’s overarching aim is for teachers to be able to use data to extend and lift the performance of every student in every class. Teachers use information from summative, formative, and external assessments to help identify the strengths and weaknesses of every student and then act upon this information. Challenging every student naturally requires significant support for teacher learning and development, including using grouping strategies and varied instructional material in the classroom.

Like many schools, MCC also understands the challenges of transforming assessment evidence into classroom teaching practice. The most pressing challenge they have found is the lack of time. Creating collaboration time for primary and secondary school levels, special teams, faculty groups, and leadership has led to the development of specific professional and development strategies. Redesigning staff meeting schedules to provide opportunities to discuss transforming data into teaching and learning strategies has been successful.<sup>1</sup>

<sup>1</sup> These schedules will be discussed in the conference session.

More recently, Marist College Canberra has focused on next steps in supporting staff. Part of this has included the development of strategic teams, Champions, for maths and reading. These Champions are involved in training sessions to develop their understanding of PAT Adaptive Testing, with the aim of then sharing their knowledge and skills with the many teams across the primary and secondary schools. The Champion model is effective in allowing teachers to not only share their knowledge with colleagues, but to gain further experience in leadership practice.

## Summary

The three elements of this research-to-practice endeavour, Progress, Research and Champions, coalesce at the school level and are enacted in the classrooms at Marist College Canberra. The combination of ACER progressive achievement practices, enabled in the MCC classrooms by teachers and supported by teacher leaders (Champions) are elaborated during the ACER Research Conference 2022. While this is one of the early opportunities for research dissemination, the ongoing case studies – with MCC and other schools around Australia – will exemplify data-supported teaching and learning practices and contribute to other schools' discussions on what might transfer to their own contexts.

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