## Excellence in teaching and learning RESEARCH evidence base

The contemporary literature recognises that excellence in teaching and learning, driven by collaboration within and beyond the school, is the cornerstone of school improvement. Consistent and high-quality classroom teaching delivers dramatic improvements in student learning. While principals establish the preconditions for effective learning, it is classroom teachers who make it happen. The primary responsibility of leadership is to establish a culture where teachers are continually improving their instructional effectiveness to enhance student outcomes.

**Building practice excellence**

Professional Learning (PL) is a key driver of educational change and the improvement of student achievement. Effective PL is aligned with school goals, priorities and values, and addresses the learning needs of staff and students. Aligning staff PL with school goals and priorities builds a sense of purpose for the professional development activities that they undertake (Bouchamma et al., 2019; Bradford & Clarke, 2015; Glen et al., 2017). Effective PL is also longer in duration, reinforced over a longer period of time (six months or more) and includes active participation. There is strong evidence that PL using multiple forms of active learning (e.g. observing expert teachers, being observed, pedagogical discussion and reviewing student work) is most effective in improving teaching practice (Van Veen et al., 2012; Yoon et al., 2007). PL can also be delivered virtually, with one rigorous study finding no significant difference in the impact between in-person and web-based virtual coaching (Powell et al., 2010).

Collaborative activities such as Professional Learning Communities (PLCs) can lead to increased collective efficacy, teacher morale and improvements in student learning outcomes. There is consensus within the research that teachers improve their pedagogical practice and positively impact student outcomes when they collaboratively reflect on and receive feedback in PLCs (Jones & Thessin, 2017 and Voelkel & Chrispeels, 2017). This collaboration can support new ideas and challenge existing ones which can be a powerful form of teacher learning. Teacher-based inquiry, collaborative data analysis and reviewing student work in PLCs drives school improvement by encouraging teachers to engage in meaningful discussions about their practice and the needs of students. Teachers also develop deeper understanding of their strengths and weaknesses and build leadership skills through PLCs (Bauman, 2015; Brown & Greany, 2018; Glen et al., 2019; Hollingworth et al., 2018).

School improvement literature also identifies coaching, the role of expert teachers, mentoring and sharing of expertise as drivers for school improvement. Effective schools regularly employ these to support professional learning activities such as beginning teacher mentor programs, supporting those in leadership positions or staff aspiring to be in leadership positions (Goss and Sonnemann, 2020). Expert teachers can have large impacts on shifting behaviours and sharing best practices, as teachers like learning from other teachers (Walker et al., 2019). Coaching is also an effective form of professional development for teachers that can lead to changes in classroom practice and improved student outcomes, particularly for low performing schools (Gibbons, Kazemi, & Lewis, 2017). Sharing expertise to improve teaching through coaching and mentoring relies on the preconditions of a culture of improvement and buy-in from teachers to improve, while having an agreed instructional model in place provides a common language of effective practice (Goss & Sonnemann, 2020; Leithwood, 2016; Liu & Hallinger, 2018; Lynch & Madden, 2015; Mayer et al., 2015).

School leaders should be aware that a strong collaborative and trusting culture enables effective PL. Where schools are not managing to cultivate a positive learning environment, teachers may have lower levels of capacity for organisational change (Edward-Groves et al., 2016; Karagiorgi et al., 2018). Additionally, teacher workloads and time are identified as the greatest barriers to collaboration and professional learning within schools (Ebell et al., 2017). Support is required from school leadership to enhance sustained collaborative practice, particularly in terms of providing space and time by releasing staff from other work commitments. Redesigning organisational structures to improve collaboration and working collectively towards achieving the school vision is described as a foundational phase of leadership for school improvement (Blank & de las Alas, 2009; Day et al., 2016; Li, 2017).

**Curriculum planning and assessment**

Much of the contemporary research linking curriculum and school improvement highlights that effective teachers have strong content knowledge and make expert use of pedagogical materials in order to improve student learning (Hattie, 2009). The choice of pedagogical materials to use can have a significant effect on student learning and teachers need to understand how students learn new content, evaluate their responses and questions and identify their misconceptions (Coe et al., 2014). There are also strong links between curriculum and feedback as feedback is more effective if it is focused more on the task and not on the student.

A stronger understanding of curriculum is built when staff work collaboratively: meeting to discuss units of work, differentiate lessons and develop assessments. Curriculum and assessment teams offer staff time for reflection and support teachers to develop plans that effectively differentiate and meet the learning needs of individual students (Bauman, 2015; Benoliel & Berkovich, 2017; Sutton & Knuth, 2020).

Assessment methods and systems influence student behaviour and ultimately student learning. Adaptations to assessment practices will need to be considered whenever there are changes in pedagogical approaches to ensure alignment between learning, teaching and assessment (Rust, 2002). A recent meta-analysis of studies on formative assessment in schools indicates a positive gain of about three months’ learning when effective feedback is provided to students. When the approach was supported with professional learning the positive gain increased to four months (Evidence for Learning, 2020). Training in the use of assessment criteria for providing meaningful feedback, and students seeking and processing feedback is effective in driving school improvement (Heitink, et al., 2016).

A rigorous systematic review of 25 studies (Heitink, et al., 2016) emphasised five attributes that are critical for implementing effective assessment for learning:

* Interpreting assessment information on the spot,
* Engaging students in the assessment process,
* Providing constructive and focused feedback,
* A school-wide assessment culture
* Collaboration and autonomy of teacher practice around assessment.

**Evidence-based high-impact teaching strategies**

Teachers have the greatest potential to positively impact on student learning, and the strategies that they use matter (Hanushek et al., 2005; Hattie, 2003). A student with a high-impact teacher can achieve in half a year what a student with a poor teacher can achieve in a full year (Leigh, 2010). The findings of tens of thousands of studies on what has worked in classrooms across Australia and the world supports teachers to add to their repertoire of strategies and maximise their impact on student learning (Hattie 2009). A number of strategies consistently identified as high-impact in research include:

* **Setting goals:** Effective schools create a context in which students are set challenging learning goals within a positive learning climate and are encouraged to build strong relationships with their teachers (Bradford & Clarke, 2015). Research has identified a statistically significant relationship between the goal-setting process and student achievement (Moeller et al., 2012).
* **Structing lessons:** The way that teachers structure lessons can have a large impact on student learning. Research has shown that student achievement is maximized when teachers structure lessons by: (a) beginning with overviews and/or review of objectives; (b) outlining the content to be covered and signalling transitions between lesson parts; (c) calling attention to main ideas; and (d) reviewing main ideas at the end (Kyriakides et al., 2013).
* **Explicit teaching:** Explicit teaching is effective in accelerating student performance and was found to have an effect size of 0.59 (Hattie, 2009). Explicit teaching is not limited to content and effective teachers explicitly teach learning behaviours by identifying where students have not acquired learning behaviours and modelling, providing examples and reinforcing through feedback (Goss et al., 2017).
* **Worked examples:** A large body of research studies has indicated positive effects of worked examples on students’ learning, especially for learners who are new to a specific task domain (Chen et al., 2019). The use of worked examples is particularly effective when explaining multi-step tasks (Hattie, 2013)
* **Collaborative learning:** Research consistently finds that collaborative approaches have a positive impact on student learning (Evidence for Learning, 2019). Student peer tutoring is also an effective intervention across a range of contexts, but potentially especially valuable to students with emotional and behavioural disorders (Bowman-Perrott et al., 2013).
* **Multiple exposures:** Research demonstrates deep learning develops over time via multiple, spaced interactions with new knowledge and concepts (Kang, 2016).
* **Questioning:** asking questions enables teachers to check for understanding, motivates students, leads students to think, develops problem solving skills and can improving academic achievement outcomes (Buchanan Hill, 2016). The most effective questions are high order ‘why?’ ‘how?” and ‘which is best?’ questions that really make students think. This requires processing time and may be more effective in pairs than alone.
* **Feedback:** Effective feedback is: specific, accurate and clear; compares what a learner is doing right now with what they have done wrong before, and encourages and supports further effort (Evidence for Learning, 2019). Those studies showing the highest effect sizes involved students receiving information feedback about a task and how to do it more effectively. Lower effect sizes were related to praise, rewards, and punishment (Hattie & Timperley, 2007).
* **Metacognitive strategies:** Metacognitive strategies support students to think about their own learning and consistently have high levels of impact on student academic achievement (Evidence for learning, 2019). Effective teachers help students develop strategies to help them solve different types of problems (Kyriakides et al., 2013).
* **Differentiated teaching:** Students come to learning with different levels of readiness, interest and pre-existing knowledge and learning does not happen at a pre-determined pace. Teaching can be differentiated by modifying the content, process, product or environment (Subban, 2006; Taylor, 2015).

**Evaluating impact on learning**

A 2020 literature review identified a significant research body supporting the use of data as a driver of school improvement which supports schools and teachers to evaluate impact on learning (Harris et al., 2020). Using data provides teachers and leaders with the opportunity to understand the underlying barriers to student learning or misconceptions and implement programs or classroom practices to address these. (Brown & Greany, 2018; Knipe, 2019). PL may be required to afford teaching staff and those in leadership positions the requisite skills for managing and analysing data. Giving teachers the confidence to read data and subsequently implement findings, can facilitate the development of a culture of data-driven decision making that fosters change (Bowers, 2017; Harris et al., 2020; Keuning et al., 2016; Moyle, 2016; Sun et al., 2016).

**Case studies: building excellence in teaching and learning in practice**

* [Fairfield Primary School, Narre Warren South P-12 College, Brighton Primary School:](https://www.education.vic.gov.au/school/teachers/teachingresources/%20practice/improve/Pages/hits.aspx) Implementing the HITs to drive school improvement
* [Burwood East Primary School](https://fuse.education.vic.gov.au/Resource/%20LandingPage?ObjectId=0ff17d39-ea41-4ee0-977f-1dac0e642ffc): Implementing a whole-school approach to teaching and learning literacy to increase teacher collaboration and shared responsibility for student outcomes
* [Wodonga Senior Secondary College](https://fuse.education.vic.gov.au/Resource/LandingPage?ObjectId=1407efe9-7853-4f25-87b3-21c5c3a4bf96): Implementing the ‘triad’ model of small teacher support to improve quality instruction in every classroom
* [Hume/Moreland Network of schools:](•%09https:/www.education.vic.gov.au/school/%20teachers/classrooms/Pages/approachesppn17cop.aspx#link2) Establishing a CoP to work collaboratively and improve student learning outcomes in numeracy
* [Footscray North Primary School](https://fuse.education.vic.gov.au/Resource/LandingPage?ObjectId=33a41d51-0f52-4332-8089-77798a963045): Developing a Literacy Non-Negotiables document to ensure consistent delivery of practice and reduce variability from room to room
* [Officer Primary School](https://fuse.education.vic.gov.au/Resource/LandingPage?ObjectId=25502f0f-5a93-40de-ab09-401b8f6abf82): build consistency in teaching and learning and strengthen staff collaboration to improve student outcomes.   Building consistency in teaching and learning and strengthening staff collaboration to improve literacy outcomes
* [Irymple Primary School](http://fuse.education.vic.gov.au/Resource/LandingPage?ObjectId=2757dfa2-186f-4f51-a64c-83a12a9a9027): Developing a moderation resource based on the Victorian Curriculum to enable teachers to assess students’ writing with consistency and accuracy across the school
* [Torquay College](https://fuse.education.vic.gov.au/Resource/LandingPage?ObjectId=ca2fb853-0afb-41ae-8252-96ede5a443e3&SearchScope=Teacher): building the capacity of staff to plan for deep learning, implement and review Inquiry units of work and consistently assess their students’ development of learning competencies.

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