What works best: Evidence-based practices to help improve NSW student performance

Centre for Education Statistics and Evaluation

1: Introduction

The perceived decline in performance of Australian students – as suggested by trends in international assessment data over a number of years – has attracted significant commentary. While NSW students typically perform above the Australian average, there is also some evidence of a downward trend here. At the same time, NAPLAN results have largely plateaued and over one in five NSW students do not complete high school, despite the well-publicised needs and demands of the knowledge economy. Some groups of students are statistically far less likely to attain minimum standards or to achieve highly than their peers.

The reasons for these trends are difficult to determine. There is no doubt that the vast majority of school leaders and teachers are as committed to ensuring positive outcomes for their students as they have ever been. At government and local levels, recent years have seen greater attention than before to improving teacher quality and school leadership, addressing persistent underperformance in literacy and numeracy, and tackling the educational disadvantage experienced by students who come from low socio-economic status (SES) backgrounds or with other characteristics that are associated with poorer outcomes.

Efforts to make sustainable improvements in student outcomes – the holy grail of education – may have been hampered by a lack of clear, reliable and accessible evidence about what really works in schools and classrooms. In New South Wales over recent years however, there has been a concerted attempt to address the deficiencies in our knowledge, both by examining the evidence base available for certain approaches and by undertaking research to explore the effectiveness of others. Significantly, some of the clearest findings indicate the value of refocusing on the 'basics'. Some of the practices likely to make the biggest difference to students include telling students clearly what the learning objectives are and what success looks like, modelling these, allowing students to practise them, and evaluating to what extent they have understood.

Another impediment to ongoing improvement in outcomes may, paradoxically, be our strong understanding of how much students' backgrounds impact on their learning. Acknowledging the different resources that students bring with them to school is vital to effectively meeting their learning needs, but preconceptions about the abilities of individual students or student groups must not compromise our commitment to helping all students realise their potential. Research shows that quality teaching practices tend to benefit students regardless of their background, but that access to these effective strategies is unevenly distributed. We also know from methodologies to estimate the value individual schools add to the learning of their students – taking into account demographic and school-level factors known to affect achievement – that some schools have much to teach us all about the mechanisms for supporting widespread success.

It is a daunting task for a teacher or principal or school leadership team to decide to challenge the status quo and tackle student improvement anew. The question of 'where to begin?' is not readily answered. The annual school planning cycle can offer a concrete first step, when schools undertake a rigorous self-assessment. This process will help identify a school's existing strengths and provide the basis for engaging the school community in discussion about future goals and strategic directions to achieve them.

As part of this process, teachers and school leaders could consider implementing the approaches highlighted in this review. The practices described here do not constitute a complete list of effective educational practice, or of the only things that teachers and school leaders should focus on to improve student outcomes. What this review does do is bring together seven themes from the growing bank of evidence we have for what works.

The seven themes addressed here are:

1. High expectations

2. Explicit teaching

3. Effective feedback

4. Use of data to inform practice

5. Classroom management

6. Wellbeing

7. Collaboration

These themes offer helpful ways of thinking about aspects of teaching practice but they are not discrete. Rather, they overlap and connect with one another in complex ways. For example, providing timely and effective feedback to students is another element of explicit teaching – two of the more effective types of feedback direct students' attention to the task at hand and to the way in which they are processing that task. Similarly, being explicit about the learning goals of a lesson and the criteria for success gives high expectations a concrete form, which students can understand and aim for. Wellbeing and quality teaching are mutually reinforcing – if students with high levels of general wellbeing are more likely to be engaged productively with learning, it is also true that improving intellectual engagement can improve wellbeing.

The seven themes are not confined to what happens in classrooms. While they offer sound strategies for individual teachers to consider as part of their repertoires, evidence suggests that their effectiveness is stronger when they are implemented as whole-school approaches. For example, the literature indicates that teachers are more likely to make effective use of student data when working together than when working alone. Ideally, everyone associated with a school – including school leaders, parents, students and community members – will share a commitment not only to the school's vision for development but to the mechanisms for achieving these goals, and will engage collaboratively in responding to the challenge.

All schools have certain resources at their disposal and increasing authority over how they are used to achieve educational outcomes. Even before schools receive funding loadings to address recognised challenges amongst their student body, schools in the NSW public system have well-trained, qualified staff, a quality curriculum, and safe buildings. Teachers have release time from face-to-face teaching and limited class sizes. Members of our broader school communities are engaged and committed. The building blocks for initiating and sustaining measurable educational improvement exist. This review is intended to support that effort across our public schools.

1. High expectations

Key points

- High expectations are linked with higher performance for all students.

- The reverse can also be true. Some students from disadvantaged backgrounds may be achieving less than their full potential due to lower expectations of their ability.

- All students need to be appropriately challenged in order to learn – but many NSW students say they aren't being challenged enough.

- A culture of high expectations needs to be supported by effective mechanisms and strategies that support every student s learning needs. Curriculum differentiation is an effective means by which this can occur in every classroom.
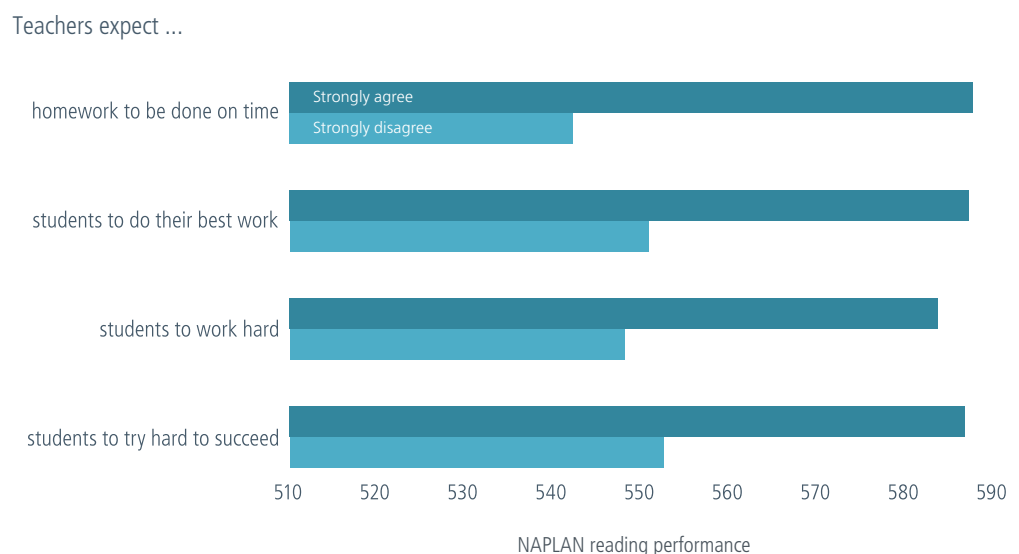
Why it matters

Research evidence consistently finds high expectations are linked with higher performance, although the causal relationships between the two are complicated. Teacher 'expectations', which can encompass a range of factors, such as encouraging students to work hard, challenging them to do their best work and to do their homework on time, can make a positive difference to students' outcomes[1].

A recent pilot survey of NSW government students in Years 4 to 12 asked a range of questions about how students felt about school[2]. The results suggest that higher student performance occurs where teachers set high expectations for the classroom and students' work (Graph 1.1).

Graph 1.1:

Average Year 9 NAPLAN (reading) performance by students' answers to questions on teacher expectations, NSW government schools, 2013

Source: Student feedback survey data.

Teachers expect ...

homework to be done on time — Strongly agree / Strongly disagree

students to do their best work

students to work hard

students to try hard to succeed

510 520 530 540 550 560 570 580 590

NAPLAN reading performance

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1   J Hattie 2009, *Visible Learning: A synthesis of over 800 meta-analysis relating to achievement,* Routledge, London and New York, pp.118-119, 121, 234; J Dunleavy et al, 2012, *The Relationship Between Student Engagement and Academic Outcomes. What did you do in School Today?*, Research Series Report Number One, Toronto, Canadian Education Association.
2   New South Wales piloted a survey of student engagement and wellbeing in 2013 and 2014 in over 220 government schools. Over 80,000 students gave their views about their experience of school and learning.

What the evidence says

International education researchers have noted that in many high-performing countries, especially in Asia, academic achievement is perceived to be the result of students' hard work rather than necessarily innate ability[3].

Empirical studies since the 1960s have looked at the impact of teacher expectations on student performance. For example, in the famous 1965 'Pygmalion in the classroom' study, researchers told teachers that a group of randomly selected elementary school students had been identified through a new test as expected 'growth spurters'. School-wide, the 'spurters' gained almost four IQ points more than the control group after one year. The effect was particularly pronounced for younger students: Grade One students gained over 15 IQ points more, and Grade Two students over nine points more than their respective control groups (both findings were statistically significant)[4].

This research is not without its critics[5]. Nevertheless, Hattie, in his meta-analysis of 'what works' to improve student performance, finds that teachers holding high expectations for all students has a positive effect on student achievement[6].

Low expectations can lower achievement

There is evidence that low expectations play a part in explaining why so many students from disadvantaged backgrounds, including academically gifted students, do not reach their full potential (or are 'underachieving')[7]. American researchers, for example, have suggested that African-American students are less likely to be recognised as having gifted and talented potential[8].

Similarly in Australia, Aboriginal students often underperform relative to their potential. A leading researcher in this area, Graham Chaffey, claims that gifted Aboriginal students are underachieving to a far greater degree than even the rest of the Aboriginal population[9]. Chaffey identifies a number of complex reasons why Aboriginal underachievement may occur, including that gifted Aboriginal students are often 'invisible' underachievers and so teachers may not recognise their potential[10].

Creating an environment of high expectations for all students may help address some of the inequities in these student outcomes.

High expectations matter at all stages of education

A culture of high expectations must start early and be maintained throughout schooling. There is evidence of students showing differences in post-school aspirations as early as Year 2 and, as a consequence of this, adjusting their expectations downwards before starting secondary school[11].

Data evidence also shows that some academically talented students become 'underachievers' in later schooling years. Analysis of NAPLAN data indicates that, while the majority of students follow a predictable achievement and gain pattern, a sub-set of them don't. For example, of the students achieving in the top 20 per cent of NAPLAN (reading) in Year 7 in 2012, almost a third (31 per cent) were no longer in the top 20 per cent for NAPLAN in Year 9 and of these around half (54 per cent) had declined by 15 or more percentiles. Time-series analysis of the relationship between Year 9 NAPLAN performance and the HSC similarly indicates a broad correlation between achievement in the two assessments, but also a sizable group of students who underperform in the HSC relative to what may have been predicted based on their Year 9 results.

3   M Barber and M Mourshed 2007, *How the world's best-performing school systems come out on top*, McKinsey & Company, London; M Mourshed, C Chijioke and M Barber 2010, *How the world's most improved school systems keep getting better*, McKinsey & Company, London; OECD 2011, Lessons from PISA for the United States, Strong Performers and Successful Reformers in Education, OECD Publishing.
4   R Rosenthal and L Jacobson 1968, 'Pygmalion in the classroom', *The Urban Review*, vol.3, no.1, p.17.
5   See for example L Jussim, S Robustelli and T Cain 2009, 'Teacher expectations and self-fulfilling prophecies', in A Wigfield and K Wentzel (eds), *Handbook of Motivation at School*, Erlbaum, Mahwah, chapter 17.
6   Hattie 2009, *Visible Learning*, pp.121-126.
7   S Reis and D McCoach 2000, 'The underachievement of gifted students: What do we do and where do we go?', *Gifted Child Quarterly*, vol. 44, pp.152-170; and L Jussim 2013, 'Teachers' expectations', in J Hattie and E Anderman (eds), *International Guide to Student Achievement*, Routledge, New York and London, chapter 6.8.
8   D Ford et al, 2011, 'Key theories and frameworks for improving the recruitment and retention of African-American students in gifted education', *The Journal of Negro Education*, vol.80, no.3, pp.239-253.
9   G Chaffey 2011, 'Is gifted education a necessary ingredient in creating a level playing field for indigenous children in education?' in W Vialle (ed.), *Giftedness from an Indigenous Perspective*, Australian Association for the Education of the Gifted and Talented.
10 Chaffey 2011, 'Is gifted education a necessary ingredient', p.96. Chaffey defines 'invisible' as those whose assessed potential, as indicated by commonly used identification methods, is less than their actual potential and who also underperform in the classroom.
11 A Blackhurst et al, 2005, 'The development of elementary-aged children's career aspirations and expectations', *Professional School Counselling* vol.8, no.4; P Creed et al, 2007, 'Career barriers and reading ability as correlates of career aspirations and expectations of parents and their children', *Journal of Vocational Behavior* vol.70, pp.242–258.

It is important that the culture of high expectations looks beyond school results to the influence of education on post-school pathways. A recent report on young Australians' aspirations found that even when controlling for student background and prior achievement, students who intended to complete Year 12 were 20 to 25 per cent more likely to do so; and students who planned on attending university were between 15 and 20 per cent more likely to do so[12].

Implications for teachers and schools

All students need to be challenged

The literature shows that all students, including high ability students, need to be continuously challenged to learn new things and if this does not occur, underachievement may result[13].
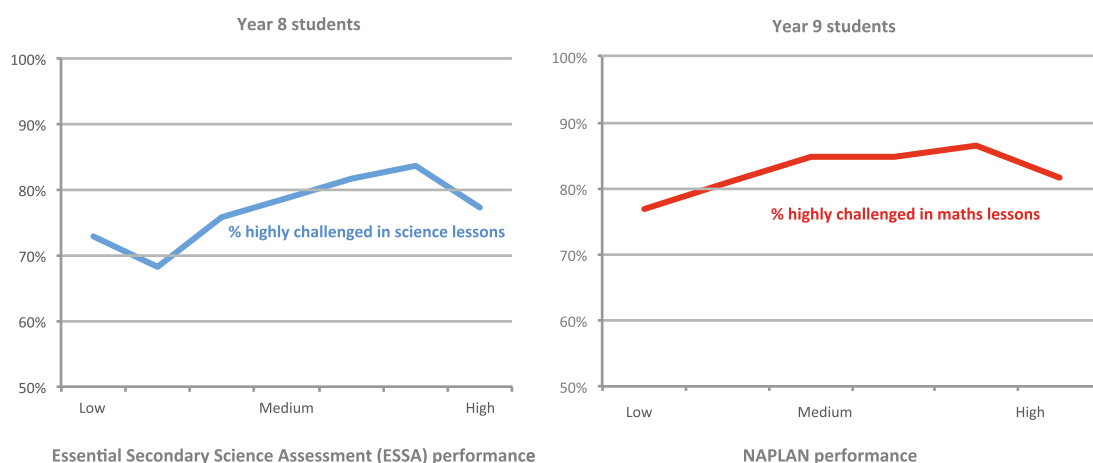
There is evidence however, that many NSW students are not challenging themselves, or being challenged enough in class. There has been a decline, for example, in course entries in HSC advanced courses and science, technology, engineering and maths (STEM) courses traditionally considered to be more challenging. The number of high-ability (top 25 per cent) government school students taking calculus-based maths courses has dropped 14 per cent between 1995 and 2013, with a decline of 27 per cent among high-ability non-government school students.

A recent survey of NSW students suggests that up to one in five (about 15 to 20 per cent) of high school students, including high-performing students, do not feel challenged enough in their schooling (Graph 1.2). This appears to be particularly the case in maths where around 20 per cent of students agree that they get bored in class because the lessons are too easy.

Graph 1.2:

Percentage of students reporting high levels of challenge in their subjects by academic performance, NSW government schools, 2013

Source: Student feedback survey data.

Year 8 students

% highly challenged in science lessons

Essential Secondary Science Assessment (ESSA) performance

Year 9 students

% highly challenged in maths lessons

NAPLAN performance

Data from the Trends in International Mathematics and Science Study (TIMSS) shows that, for example, for Australian students in Years 4 and 8, the challenge of working on problems on their own is associated with higher average results in mathematics and for Year 8 science as well (Graph 1.3). This is consistent with research about the importance of teaching study skills, and of teachers having and communicating clear expectations of what students need to learn[14].

12   J Homel and C Ryan 2014, *Educational outcomes: The impact of aspirations and the role of student background characteristics*, Longitudinal Surveys of Australian Youth Research Report No. 65, National Centre for Vocational Education Research, p.27; see also CESE 2013, *Turning aspirations into reality: How teachers can support students' transition to university and vocational education and training*, Learning Curve 3, NSW Department of Education and Communities, Sydney.
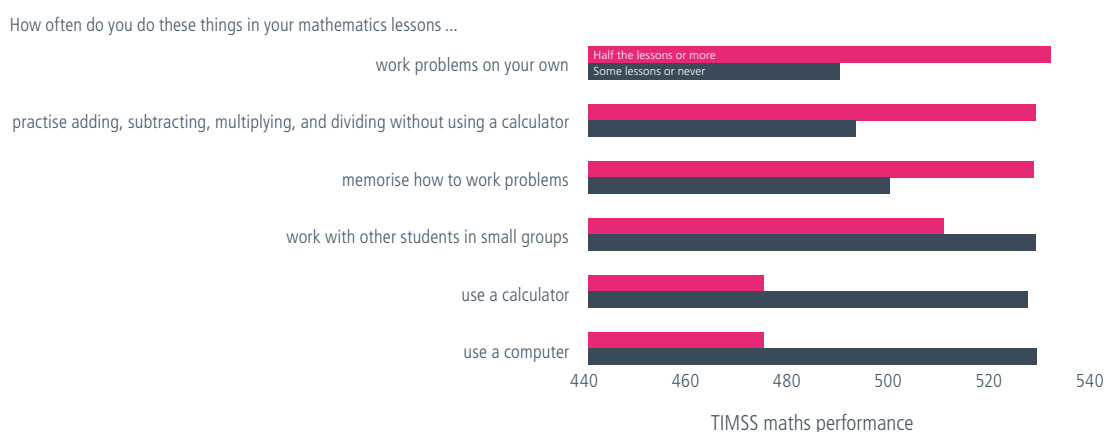13   K Rogers 2007, 'Lessons learned about educating the gifted and talented: A synthesis of the research on educational practice', *Gifted Child Quarterly*, vol. 51.
14   CESE 2012, *Teaching quality: effective teaching practices for improving student achievement*, Learning Curve 1, NSW Department of Education and Communities, Sydney.

Graph 1.3:

Year 4 mathematics scores by frequency of selected teaching practice, Australia, TIMSS 2007

Source: CESE analysis of TIMSS 2007 data.

How often do you do these things in your mathematics lessons ...

work problems on your own

Half the lessons or more
Some lessons or never

practise adding, subtracting, multiplying, and dividing without using a calculator

memorise how to work problems

work with other students in small groups

use a calculator

use a computer

440   460   480   500   520   540

TIMSS maths performance

Effective curriculum differentiation helps challenge all learners

Research indicates that along with a culture of high expectations, successful systems include mechanisms that ensure students receive the instruction they need to achieve their full potential.

Catering for diverse learning needs is an important teaching skill, and the benefits of remedial interventions for lower-performing students are clear. Effective curriculum differentiation is also important as a means of challenging and extending all students.

Access to a broad, rigorous and challenging curriculum is an important factor of successful high expectation environments. For example, studies of urban youth in America (a significantly disadvantaged population) have indicated that participation in 'academically rigorous tracks' (college preparatory streams) is positively related to school achievement and educational aspirations[15].

The literature suggests that teachers in Australia are not universally good at differentiating the curriculum to meet the needs of high-potential, high-achieving students. Two Australian Senate inquiries (1988, 2001) into provisions for high achievers recommended an increase in pre-service teacher training in the education of high achievers and that this training become mandated[16]. However, despite these recommendations, Australian teachers continue to have little access to pre-service teacher training at university level for high-ability students, meaning that teachers are often educating these students without any exposure to how to differentiate the curriculum to accommodate different learning needs and challenge each student.

A culture of high expectations is an important springboard for each of the focus areas discussed in this review, as it places students' learning outcomes first and foremost.

15   J Oakes 1995, 'Two cities' tracking and within-school segregation', *Teachers College Record*, vol. 96; cited in M Irvin et al, 2011, 'Relationship of school context to rural youth's educational achievement and aspirations', *Journal of Youth Adolescence* vol.40, pp.1227-8.
16   Senate Employment, Education and Training References Committee 2001, *The education of gifted children*, Australian Government Publishing Service, Canberra; and Senate Select Committee on the Education of Gifted and Talented Children 1988, *The education of gifted and talented children*, Australian Government Publishing Service, Canberra.

2. Explicit teaching

Key points

- Explicit teaching practices involve teachers clearly showing students what to do and how to do it, rather than having students discover or construct information for themselves.

- Explicit teaching recognises that learning is a cumulative and systematic process, starting with building strong foundations in core skills in literacy and numeracy.

- Effective teacher practices ensure that students have clear instruction on what is expected of them, and what they need to learn from tasks. It ensures that students are given time to engage with the learning process, ask questions and get clear feedback.

- Students who experience explicit teaching practices make greater learning gains than students who do not experience these practices.

Why it matters

The evidence shows that students who experience explicit teaching practices perform better than students who do not. Worryingly, data shows that students from low socio-economic status backgrounds are less likely to experience these practices.

What the evidence says

The term 'direct instruction' is often used interchangeably with explicit instruction or teaching. When this paper refers to direct instruction, it refers to the set of teaching practices that Hattie describes below, rather than the product named 'Direct Instruction' which packages a suite of teaching resources.

The approach is summarised by Hattie as follows:

> The teacher decides the learning intentions and success criteria, makes them transparent to the students, demonstrates them by modelling, evaluates if they understand what they have been told by checking for understanding, and retelling them what they have been told by tying it all together with closure[1].

This model of explicit teaching is sometimes represented as the opposite of inquiry-based or 'constructivist' teaching, which involves students discovering or constructing essential information for themselves[2]. As Dinham notes, this is one of education's false dichotomies. While subject content knowledge has been demoted to rote learning by some commentators, and set in opposition to critical thinking, in reality critical thinking processes depend on factual knowledge stored in long-term memory[3]. Obviously, the optimum balance of approaches changes as students progress through school. This is consistent with the TIMSS data, in which better performance is associated with manual problem solving in Year 4, but with the use of calculators and group work in Year 8[4].

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1   Hattie 2009, *Visible Learning*, p.206.
2   P Kirschner, J Sweller and R Clark 2006, 'Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching', *Educational Psychologist*, vol.41, no.2, p.75.
3   S Dinham 2014, 'Primary schooling in Australia: Pseudo-science plus extras times growing inequality equals decline', Paper presented at the Australian College of Educators National Conference, 11 September 2014.
4   CESE analysis of TIMSS 2007 data.

Support for explicit teaching practices is long-standing

The average effect size of explicit teaching is 0.59[5]. Explicit teaching was first evaluated during the 1960s in 'Project Follow Through', a ten-year study involving over 72,000 students (including control groups). Project Follow Through aimed to compare the performance of disadvantaged students experiencing different educational practices[6]. Explicit teaching was found to have improved student outcomes in basic skills, cognitive-conceptual skills and affective skills to a greater extent than any other approach. This research demonstrates that 'when dealing with novel information, learners should be explicitly shown what to do and how to do it'[7].

Subsequent studies have confirmed the original findings about the benefits of explicit teaching, which has been found to be particularly effective for disadvantaged children. One review of meta-analyses in this area concluded that 'citing an individual study to prove that direct instruction doesn't work is like citing a rainstorm in Tucson to prove that southern Arizona isn't a desert. The preponderance of evidence shows otherwise'[8]. Another review of evidence found that the empirical research was overwhelming and unambiguous[9].

Effect sizes explained

Effect sizes are commonly used when combining findings from independent studies (meta-analysis) as a way of measuring the significance or magnitude of the subject(s) of study. Hattie identifies an effect size of 0.40 as a threshold or 'hinge point' to indicate what works best. An effect size of 0.40 or higher means that a specific program or intervention being measured shows an above-average beneficial effect on student outcomes.

Source: Hattie 2009, *Visible Learning*.

Explicit teaching recognises that deep understanding starts with strong foundations in literacy and numeracy

Research evidence supports a need for learners to master core skills in reading, writing and numeracy before higher-order learning can occur. For example, evidence shows the advantage of a 'phonics' approach to teaching reading to children in preschool and the early primary school years. This approach emphasises repetition to learn habits, where students 'sound out' words when reading in order to decode new words[10]. The phonics approach is often contrasted to a 'whole-language' approach, which focuses more on students understanding the meaning of whole words rather than the sounds of the letters, and teaching by relating new knowledge to previous knowledge[11].

As part of the phonics approach, tasks are analysed and broken down into component parts, and learning is facilitated by the explicit teaching of segments of a whole[12]. The teaching of phonics is usually characterised as requiring a high degree of teacher-centred presentation of learning material, with an emphasis on explicit instruction, scheduled practice and feedback[13]. This is also sometimes referred to as a 'bottom-up' approach, as it focusses primarily on the acquisition of what could be considered foundational skills.

5   Hattie 2009, *Visible Learning*, p.205.
6   F Wyatt and C Campbell 1981, 'Ten years of Follow Through – What have we learned?' Paper presented at the *Annual Meeting of the International Reading Association*, 27 April-1 May.
7   Kirschner, Sweller and Clark 2006, 'Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching', p.79.
8   Education Consumers Foundation 2011, *Direct instruction: What the research says*.
9   Kirschner, Sweller and Clark 2006, 'Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching', p.76.
10   J Rose 2006, *Independent review of the teaching of early reading: Final report*, UK Department of Education and Skills, London.
11   J Reyhner 2008, *The reading wars: Phonics versus whole language*, Northern Arizona University, viewed 23 June 2014, http://jan.ucc.nau.edu/~jar/Reading_Wars.html.
12   Victorian Department of Education and Early Childhood Development 2007, *Evidence-based research for expert literacy teaching, Paper No.12*, Department of Education and Early Childhood Development, East Melbourne.
13   Department of Education, Science and Training 2005, *Teaching reading: Report and recommendations*, National Inquiry into the Teaching of Literacy, Commonwealth of Australia, Canberra.

Hand in hand with explicit teaching is the need for a systematic and sequenced approach to what is being taught. Using phonics as an example, it is important not just that it is taught, and that it is taught explicitly (as outlined above), but also when it is taught. Children will learn to read most effectively if they are taught phonics at the very start of beginning to read[14].

Similarly, if children miss out on understanding key concepts in mathematics, they will not be able to master more complex concepts and skills. For both mathematics and science, the evidence suggests that frequent memorising of facts and procedures can improve student learning[15]. For example, as can be seen in the TIMSS data for Year 4 maths (Graph 1.3), higher student achievement is associated with the frequent use of memorising skills (as well as problem working). This suggests students who have attained a level of instant recall of basic facts and information are better able to engage with higher-order thinking and problem-solving[16].

Students achieve significantly higher average scores when their teachers challenge them and are explicit about their expectations and the criteria for success

In a recent survey of NSW students, Year 5 students who agreed that they knew the purpose of what they were learning scored on average 38 NAPLAN score points higher than students who disagreed (Graph 2.1).

Graph 2.1:

Average Year 5 NAPLAN (reading) performance by responses to 'I know the purpose of what we are learning', NSW government schools, 2013

Source: Student feedback survey data.
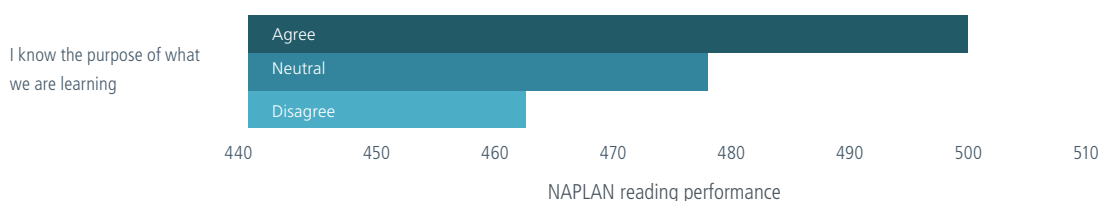
Programme for International Student Assessment (PISA) 2009 data indicates that students who experienced the following four practices (the first four in Graph 2.2) demonstrated learning more than a year in advance of students who did not experience these practices:

- Asks students to explain the meaning of a text
- Gives students the chance to ask questions about assignments
- Asks questions that challenge students to get a better understanding
- Tells students in advance how their work is going to be judged.

For example, students who reported that their teachers always or mostly explained to them in advance how their work would be judged scored on average 531, compared with 492 for students whose teachers didn't explain very often.
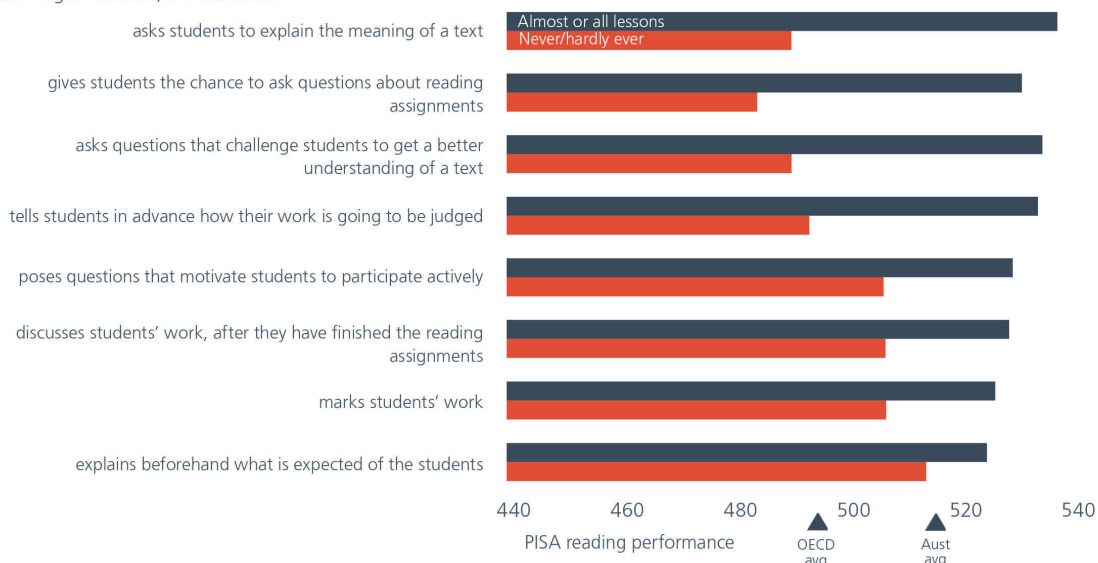
Graph 2.2:

Reading literacy scores by frequency of teaching practice, Australia, PISA 2009

Source: CESE analysis of PISA 2009 data.

14 J Buckingham, K Wheldall and R Beaman-Wheldall 2013, 'Why Jaydon can't read: The triumph of ideology over evidence in teaching reading', *Policy*, vol.29, no.3, pp.21-32.
15 S Main and J O'Rourke 2011, 'New directions for traditional lessons: Can handheld game consoles enhance mental mathematics skills?', *Australian Journal of Teacher Education* vol.36, no.2; Commonwealth of Australia, *National Numeracy Review Report* 2008, Commissioned by the Human Capital Working Group COAG, Chaired by Prof. Gordon Stanley; and P Westwood 2008, *What teachers need to know about numeracy*, ACER Press, Camberwell, p.59; M Wong and D Evans 2007, 'Improving Basic Multiplication Fact Recall for Primary School Students', *Mathematics Education Research Journal* vol.19, no.1, pp.90-91.
16 CESE 2012, *Teaching quality: effective teaching practices for improving student achievement*, Learning Curve 1, NSW Department of Education and Communities, Sydney, p.3.

Results from the latest PISA tests (2012) show a similar pattern. When comparing the test scores of students who said that certain teaching practices occurred frequently (in all or almost all lessons), compared with those who said the practices happened 'hardly ever' (or never), 13 teacher practices show a statistically significant difference. For 6 of these 13 practices (Graph 2.3), the difference in performance is equivalent to one year of schooling (one year of schooling in Australia corresponds to an average of 35 score points on the PISA mathematical literacy scale)[17].

Graph 2.3:

Mathematics scores by frequency of teaching practice, Australia, PISA 2012

Source: CESE analysis of PISA 2012 data.

In our maths lessons, the teacher...
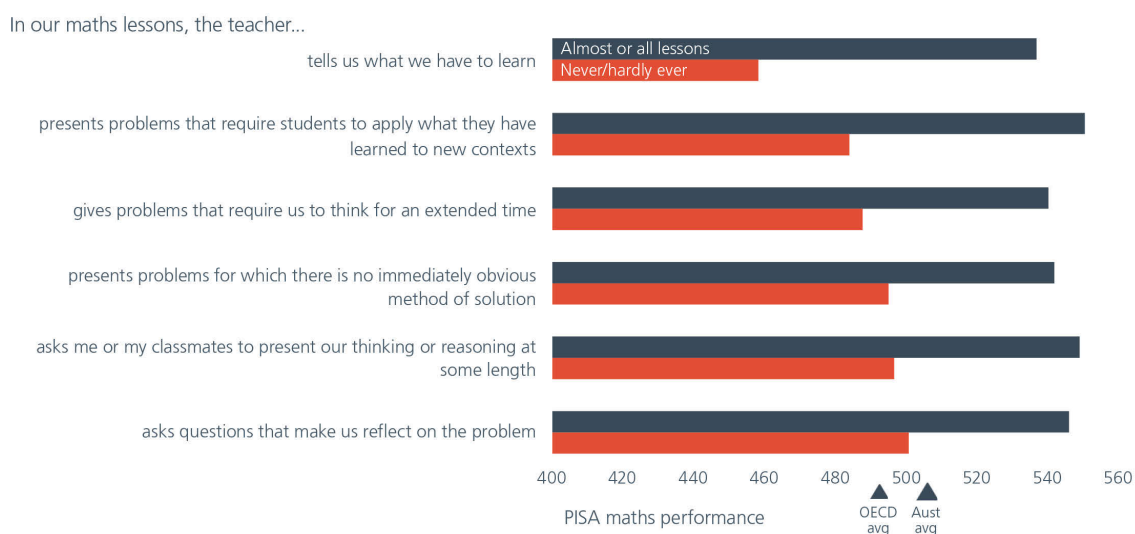
Asking questions is important

The PISA 2009 data (Graph 2.2) shows that students whose teachers rarely asked challenging questions were likely to perform below the OECD average (493), while students who report that their teachers frequently asked challenging questions were likely to score well above the already high Australian average. This supports the need for teachers to have high expectations for their students, as discussed earlier in this paper.

The literature supports the use of questioning to support comprehension, problem solving, reasoning, creativity and learning. It also identifies some forms of questions as more effective than others. Craig distinguishes between shallow questions that verify existing knowledge, and don't take much thought, and deep questions, which ask learners to build connections between ideas[18]. The What Works Clearinghouse, an American organisation that identifies the strongest evidence on policy interventions, reports strong evidence for teachers encouraging students to both ask and answer deep-level questions[19].

Students from low socio-economic backgrounds are less likely to experience explicit teaching practices

PISA 2009 data also indicates that students from lower socio-economic status backgrounds are less likely to experience these practices. For instance, while 72 per cent of high-SES students reported being asked to explain the meaning of a text, the proportion of low-SES students asked to perform this same task was much lower: 53 per cent.

17   S Thomson, L De Bortoli and S Buckley 2013, *PISA 2012: How Australia measures up*, Australian Council for Educational Research, p.21.
18   S Craig 2013, 'Questioning', in J Hattie and E Anderman (eds), *International guide to student achievement*, Routledge, New York, p.414.
19   What Works Clearinghouse, *Organising instruction and study to improve student learning*, viewed 8 October 2014, http://ies.ed.gov/ncee/wwc/PracticeGuide.aspx?sid=1.

Implications for teachers and schools

The evidence strongly supports teachers' use of explicit teaching practices, including:

• Telling students what they will be learning, and being clear about the purpose of tasks

• Demonstrating or explaining new ideas, and checking that students understand

• Giving time for asking and answering questions

• Systematically delivering basic skills, and teaching skills in the right sequence so that students master the building blocks of skills like literacy and numeracy

• Asking students challenging questions, such as 'why, why-not, how, what-if, how does X compare to Y, and what is the evidence for X?'[20]

• Assessing and confirming whether students understand what they are learning before progressing

• Reviewing learning and explaining how it contributes to related, and more complex, skills.

Of course, it is important to note that while these explicit teaching practices are effective, they do not operate in a vacuum. For instance, in science teaching, a mixture of teaching and learning activities that combines practical engagement in research activities with theorising, reflection and discussion of scientific concepts, scientific approaches and findings is important in supporting students' science competence as well as their interest in science[21].

20 H Pashler et al, 2007, *Organizing instruction and study to improve student learning*, Institute of Education Sciences, US Department of Education, p.29.
21 M Kobarg et al, 2011, *An International Comparison of Science Teaching and Learning – Further Results from PISA 2006*, p.89; see also Centre for Education Statistics and Evaluation 2013, *Using survey data to get inside the educational black box*, http://www.cese.nsw.gov.au/component/k2/item/37-dg-seminar-august-2013.

3. Effective feedback

Key points

- Feedback is one of the most powerful influences on student achievement.

- Feedback that focuses on improving tasks, processes and student self regulation usually has a positive effect.

- Rewards, as well as some kinds of praise, tend to be ineffective or at times have a negative effect.

Why it matters

Feedback is widely recognised and promoted by the teaching profession as an effective practice. It constitutes a core component of AITSL Australian Professional Standards for Teachers[1], and 78 per cent of NSW teachers surveyed as part of the Teaching and Learning International Survey (TALIS) reported that they always or almost always corrected assignments and gave feedback to students[2]. However all teachers can give more, as well as more effective, feedback[3]. International and NSW data sets show that students who are provided with feedback tend to perform better than students who are not.

What the evidence says

Feedback impacts on student performance

Timperley defines feedback as information provided by an agent (usually a teacher) to a student about aspects of performance or understanding[4]. Feedback is 'among the most powerful influences on achievement'[5]. One meta-analysis found that the average effect size of feedback was 0.79, an effect size comparable to that of students' prior cognitive ability (0.71). It is also more cost effective than other strategies such as reducing class size (0.12)[6].
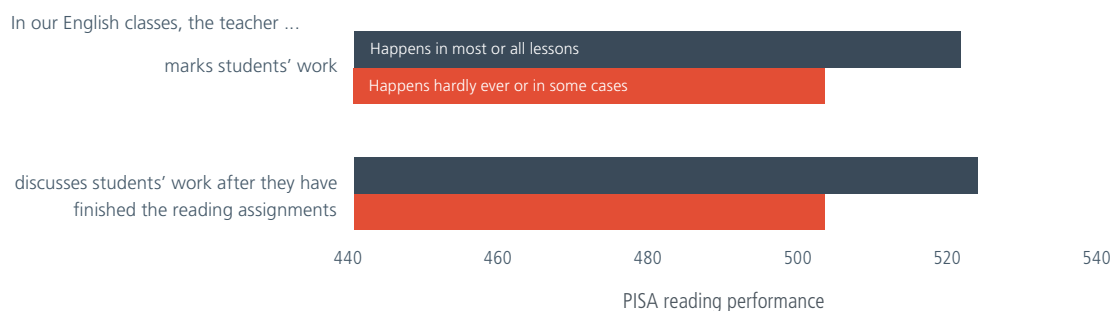
Data from PISA 2009 supports the view that feedback impacts student performance. That data showed that Australian students whose teachers discussed students' work after they had finished assignments in most or all classes performed better (526) than students whose teachers did so hardly ever or in some cases (505). The results are similar in relation to teachers marking students' work (Graph 3.1).

1   Australian Institute for Teaching and School Leadership, *Professional Practice*, viewed 3 October 2014, http://www.aitsl.edu.au/australian-professional-standards-for-teachers/standards/list?s=5.
2   CESE analysis, *Teaching and Learning International (TALIS) Survey* 2013, Question R16a.
3   S Dinham 2008, 'Feedback on feedback', *Teacher,* vol.2008, no.191, p.23.
4   H Timperley 2013, 'Feedback', in J Hattie and E Anderman (eds), *International guide to student achievement*, Routledge, New York, p.402.
5   Hattie 2009, *Visible Learning*, p.173.
6   J Hattie and H Timperley 2007, 'The power of feedback', *Review of Educational Research*, vol.77, no.1, p.83.

Graph 3.1:

Reading literacy scores by frequency of teaching practice, Australia, PISA 2009

Source: CESE analysis of PISA 2009 data.

In our English classes, the teacher ...

marks students' work
- Happens in most or all lessons
- Happens hardly ever or in some cases

discusses students' work after they have finished the reading assignments

440   460   480   500   520   540

PISA reading performance

These PISA findings are supported by a recent survey of NSW students. Students who agreed that feedback from assessments and quizzes helped them learn tended to perform better than those who disagreed (Graph 3.2). However, students from high-SES backgrounds were far more likely to agree with this statement compared with low-SES students (56 per cent and 35 per cent, respectively).

Graph 3.2:

Average Year 9 NAPLAN numeracy performance by answers to the question, 'the feedback from assessments and quizzes helps me learn', NSW government schools, 2013

Source: Student feedback survey data.

Feedback from assessments and quizzes helps me learn
- Agree
- Neutral
- Disagree

540   550   560   570   580   590   600   610

NAPLAN numeracy performance
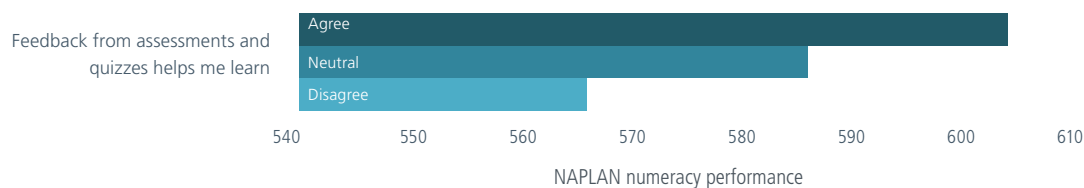
Feedback that focuses on tasks, processes and student self-regulation is the most effective

Task or corrective feedback has been shown to be effective: providing feedback that an answer is correct provides an effect size of 0.43, and 0.25 when the answer is incorrect[7]. While useful, task feedback may be too specific to apply to other pieces of work.

On the other hand, feedback on how a task is processed by a student, and feedback that develops skills in self-regulation, are more easily generalisable. One study on goal-setting found that process feedback informed the ability of the study's subjects to develop their own strategies[8].

Good feedback practice helps students take control of their own learning by becoming self-regulated learners[9]. Self-regulated learning emphasises autonomy and control over the learning process: students who ask questions, take notes, and allocate their time and resources effectively are self-regulated learners[10]. They create 'internal feedback' and 'cognitive routines' in their learning[11]. Although seen by some researchers in the education and psychology fields as the most important kind of feedback, the supporting evidence is thinner in this area than that regarding other kinds of feedback[12].

Feedback about the self (such as 'good girl') tends to be less effective because it does not provide enough information on the task, and is 'too influenced by students' self-concept'[13].

7   Hattie and Timperley 2007, 'The power of feedback', p.85.
8   P Early 1990, 'Impact of process and outcome feedback on the relation of goal setting to task performance', *Academy of Management Journal*, vol.33, no.1, p.102.
9   D Nicol and D MacFarlane-Dick, 'Formative assessment and self-regulated learning: a model and seven principles of good feedback practice', viewed 10 October 2014 http://www.psy.gla.ac.uk/~steve/rap/docs/nicol.dmd.pdf.
10   S Paris and A Paris 2001, 'Classroom applications of research on self-regulated learning', *Educational Psychologist*, vol.36, no.2, p.89.
11   Hattie and Timperley 2007, 'The power of feedback', p.94.
12   See, e.g., D Nicol 2009, 'Assessment for learner self-regulation: Enhancing achievement in the first year using learning technologies', *Assessment and Evaluation in Higher Education*, vol.34, no.3, p.345.
13   Hattie and Timperley 2007, 'The power of feedback', p.96.

Some kinds of feedback impact negatively on students' learning

Not all feedback contributes to improved student outcomes. One meta-analysis of the evidence on feedback found that over one-third of 'feedback interventions' had a negative impact on performance[14].

Praise is currently one of the forms of feedback most commonly used in classrooms[15]. However, a group of researchers has recently confirmed that praising children aged seven to eleven with low self-esteem can be damaging. This is particularly the case when praise relates to ability ('you're very clever'), rather than effort ('it is wonderful that you have worked so hard on this painting'); or when the praise is inflated ('that is an *incredibly* beautiful painting'). While inflated praise can cause children with high self-esteem to seek out challenges, it has the opposite effect on children with low self-esteem, who are more likely to withdraw to avoid failure – but who are also more likely to receive this kind of praise[16].

Praise *can* be effective when it is focused on effort. Gunderson and colleagues found that parents' cumulative use of praise about effort and process (such as 'you must have tried hard') was correlated with the views of seven- to eight-year-old students that effort and deliberate practice (rather than innate ability) led to success[17]. Ninety-three per cent of NSW teachers surveyed as part of the Progress in International Reading Literacy Study (PIRLS) reported praising students for good effort[18].

Extrinsic rewards have been found to reduce students' internal motivation[19]. Hattie questions whether rewards such as stickers and awards should be classified as feedback at all, noting that they provide students with very little information about the task at hand[20].

Implications for teachers and schools

The evidence points to the importance of feedback in improving student outcomes. Forms of feedback that appear to be particularly effective include:

• Feedback about a student's process or effort: 'You must have tried hard'.

• Feedback that encourages students' self-regulation: 'You already know the key features of the opening of an argument. Check to see whether you have incorporated them in your first paragraph'[21].

Forms of feedback that appear to be less effective include:

• Praise about a student's innate intelligence or talents: 'You are a great student'.

• Extrinsic rewards for work, such as stickers.

14 A Kluger and A DeNisi 1996, 'The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory', *Psychological Bulletin*, vol.119, no.2, p.275.
15 Timperley 2013, 'Feedback', p.404.
16 E Brummelman et al, 2014, '"That's not just beautiful – that's incredibly beautiful!": The adverse impact of inflated praise on children with low self-esteem', *Psychological Science*, vol.25, no.3, p.730, 732.
17 E Gunderson et al, 2013, 'Parent praise to 1- to 3-year-olds predicts children's motivational frameworks 5 years later', *Child Development*, vo.84, no.5, p.1530.
18 CESE analysis, Progress in International Reading Literacy Study (PIRLS) 2011, Teacher Questionnaire, G15e.
19 For instance, Deci, Koestner and Ryan found that the expectation of tangible rewards decreased free choice intrinsic motivation, with an effect size of -0.36: E Deci, R Koestner and R Ryan 1999, 'A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation', *Psychological Bulletin*, vol.125, no.6, p.640.
20 Hattie 2009, *Visible Learning*, p.175.
21 Hattie and Timperley 2007, 'The power of feedback', p.90.

4. Use of data to inform practice

Key points

- Effective analysis of student data helps teachers identify areas in which students' learning needs may require additional attention and development.

- Data can also help teachers see which students may be struggling to engage with particular learning areas, and understand which students respond better to different teaching approaches in their classroom.

- High quality assessment practice is crucial for effective data analysis of student outcomes and wellbeing.

- Teachers need access to tools, skills and training to help them interpret and use this data effectively.

Why it matters

The advantages of teachers using data from assessment for formative purposes are well documented[1]. In a review by international education experts of the world's top performing systems, a consistent finding was that the best systems all use effective assessment and data to drive improvement: systems cannot improve what they do not measure[2].

In Australia, equipping teachers to use data effectively can lift students' performance by ensuring continued improvement. However, international studies reveal that many teachers do not feel equipped to use assessment data for formative purposes or at all[3]. Teachers and principals in New South Wales also identify the effective use of assessment data as an area requiring additional professional development.

Formative assessment occurs when assessment, whether formal (e.g. testing) or informal (e.g. classroom questioning), is primarily intended for, and instrumental in, helping a student attain a higher level of performance. Formative assessment occurs prior[i] to summative assessment; its purpose is partly to guide future learning for the student. Because the primary purpose of formative assessment is feedback to the learner, it is often ungraded and, by definition, low-stakes. Formative assessment is deemed to be assessment *for* learning.

Summative assessment occurs when assessment is designed to indicate the achievement status or level of performance attained by a student at the end of a course of study or period of time. It is geared towards reporting or certification. Summative assessment is deemed to be assessment *of* learning.

[i]Although in some practices, formative judgments contribute to reported results.

Source: G Matters 2006, *Australian Educational Review – Using data to support Learning in schools: Students, teachers, systems*, ACER Press, Canberra.

1   See, for example: P Black and D Wiliam 1998, 'Inside the black box: Raising standards through classroom assessment', *Phi Delta Kappan*, vol.80, no.2; Hattie and Timperley 2007, 'The power of feedback'.
2   Barber and Mourshed 2007, *How the world's best-performing school systems come out on top*, pp.35-36.
3   M Heritage et al, 2009, 'From evidence to action: A seamless process in formative assessment?', *Educational Measurement: Issues and Practice*, vol.28, no.3; M Heritage, B Jones and E White 2010, 'Knowing what to do next: The hard part of formative assessment?' Paper presented at the annual meeting of the American Educational Research Association, 2 May; B Boyle and M Charles 2010, 'Defining ongoing assessment: The effective method for supporting teaching and learning in early years and primary education', *School Leadership and Management Journal* vol.30, no.2; M Gearhart et al, 2006, 'Developing expertise with classroom assessment in K-12 science: Learning to interpret student work', *Educational Assessment*, vol.1.

What the evidence says

When teachers are equipped with the skills to interpret and use data, student outcomes improve

A study by Timperley in 2009 showed that a professional development program for teachers that focused on the interpretation and use of assessment information resulted in student achievement gains accelerating at twice the expected rate. For all schools that focused on writing, the average effect size was 1.20; for reading, 0.92. Gains were found to be greatest for the lowest-performing 20 per cent of students: effect sizes were 2.25 in writing and 1.90 in reading for these students[4].

A meta-analysis by RAND Corporation found that districts and schools in the US that pursued more complex data-driven decision-making processes were those that allocated valuable time to data analysis or created new structures (for example, study groups) to facilitate it. Time allocated to collaborative data analysis and inquiry has also been shown to assist educators in developing a more complex understanding of how data can contribute to school improvement[5].

The evidence is still accumulating on this topic. Mandinach argues that there is a shortage of rigorous evidence (such as randomised controlled trials) on the impact of the use of assessment data and improved student outcomes, as practices are still evolving in jurisdictions, making evaluation complicated at this stage[6].

Good assessment practice is critical for data to inform teaching practice

Historically, assessment data was used to provide information about a student's level of ability, rather than as a source of information for teachers to guide and direct students and to reflect on the effectiveness of their own teaching practice. Formative assessment takes place nearly exclusively in the classroom and is essential to inform teaching that creates more learning[7]. Black and Wiliam describe two specific improvement strategies for teachers: ensure that classroom assessment provides accurate and important information; and give effective feedback to students[8].

Teachers need to be able to design classroom assessments that are frequent, high-quality and have clear, consistent scoring criteria. To use this data to inform effective teaching practice requires teachers to have deep pedagogical content knowledge and the ability to respond constructively to what the data is telling them, changing their practice where required. For students to benefit from ongoing and constructive assessment, teachers must also provide timely and specific feedback based on that data.

NSW teachers are increasingly focusing on data to improve students' outcomes

There is some evidence that the shift towards training teachers to use data effectively is occurring in New South Wales. Some teachers received training on the effective use of data as part of the National Partnership on Literacy and Numeracy[9]. These teachers reported a greater understanding of data analysis tools and techniques, leading to changes in their classroom practice. For instance, 81 per cent of survey respondents said that this training had led, to a great extent, to more effective classroom teaching of literacy and numeracy.

Surveys of Australian teachers reveal a need for further professional learning and better initial teacher education in using data

The 2013 Staff in Australia's Schools (SiAS) survey reported that 25.7 per cent of primary teachers identified a need for more professional learning in 'making effective use of student assessment information' and 18.8 per cent for 'interpreting achievement reports from national or state-wide assessments'[10]. The findings were similar for secondary teachers. Early-career teachers (defined as teachers with less than five years' experience) particularly in primary schools were more likely to report a greater need for further professional learning in these areas than those with more experience.

4   H Timperley 2009, 'Using assessment data for improving teaching practice', Paper presented at the Australian Council for Educational Research Conference, 16-18 August, Perth; see also, H Timperley and J Parr 2009, 'Chain of Influence from policy to practice in the New Zealand literacy strategy', *Research Papers in Education*, vol.24, no.2, pp.135-154.
5   G Ikemoto and J Marsh 2007, *Cutting through the 'data-driven' mantra: Different conceptions of data-driven decision making*, RAND Corporation, Santa Monica; citing also M Lachat 2001, *Data-driven high school reform: The Breaking Ranks model*, Providence, RI, LAB at Brown University.
6   E Mandinach 2012, 'A perfect time for data use: Using data-driven decision making to inform practice', *Educational Psychologist*, vol.47, no.2, pp.71-85.
7   J Arter 2003, 'Assessment for learning: Classroom assessment to improve student achievement and wellbeing', in *Measuring up: Assessment issues for teachers, counsellors, and administrators*, J Wall and G Walz (eds), CAPS Press, U Minnesota, chapter 33.
8   Black and Wiliam 1998, 'Inside the black box: Raising standards through classroom assessment'.
9   T Wyatt and R Carbines 2011, *Evaluation of the take-up and sustainability of new literacy and numeracy practices in NSW schools: Final report of phase 1*, Erebus International, Table 12.
10   P McKenzie et al, 2014, *Staff in Australia's Schools (SiAS) 2013: Main Report on the Survey*, Australian Council for Educational Research, commissioned by the Department of Education, Canberra, Table 6.4, p.74.

Significantly, of the early-career primary teachers surveyed, only 27.2 per cent reported that their pre-service teacher education course was 'helpful' or 'very helpful' for interpreting national or state-wide assessment data, with 34.2 per cent stating that it was 'not helpful'[11]. Views were more positive regarding preparation for making effective use of student assessment data, with 48.3 per cent finding it 'helpful' or 'very helpful'. Results were similar for secondary teachers.

Principals agreed there is a lack of teacher preparation in this domain, with only 14.3 per cent of primary principals reporting that graduates were 'prepared' or 'very well prepared' to interpret national or state-wide achievement reports and only 23.3 per cent were 'prepared' or 'very well prepared' in making effective use of student assessment information[12]. The findings for secondary teacher graduates were slightly more positive.

Implications for teachers and schools

• Data matters to student outcomes – when teachers are able to use and implement assessment data effectively, they can drive improvement in student achievement and wellbeing outcomes.

• Quality data is important – teachers need to be able to design and implement good formative assessment in order to obtain useful data which they can use to adapt and inform their teaching practice.

• School leaders need to encourage whole-of-school focus – school leaders must support teachers' professional learning in effective use of data, and encourage evidence-based teacher practices across the school. This includes promoting discussions about data, supporting use of assessment data to address students' needs, and facilitating opportunities for collaboration within and across schools[13].

11   McKenzie et al, *SiAS 2013*, Table 8.6, p.93
12   McKenzie et al, *SiAS 2013*, Table 12.17, p.132
13   N Protheroe 2009, 'Improving teaching and learning with data-based decisions: Asking the right questions and acting on the answers', *ERS Spectrum*, vol.19, no.3.

5. Classroom management

Key points

- Effective classroom management is important for creating the conditions for learning.

- Data confirms a link between effective classroom management and student performance.

- Early career teachers are likely to benefit from explicit support in developing effective classroom management strategies.

Why it matters

Effective classroom management means teachers can spend more time teaching and less time on controlling students' behaviour. Evidence shows that improving classroom management practices can help improve students' performance.

A recent survey of NSW students shows declining levels of classroom discipline from the end of primary school through to the middle years of secondary school. In line with other indicators of student engagement, disciplinary climate picks up in senior high school (Graph 5.1).

Graph 5.1:

Percentage of students with a positive classroom disciplinary climate, by school year, NSW government schools, 2014[1]

Source: Student feedback survey data.
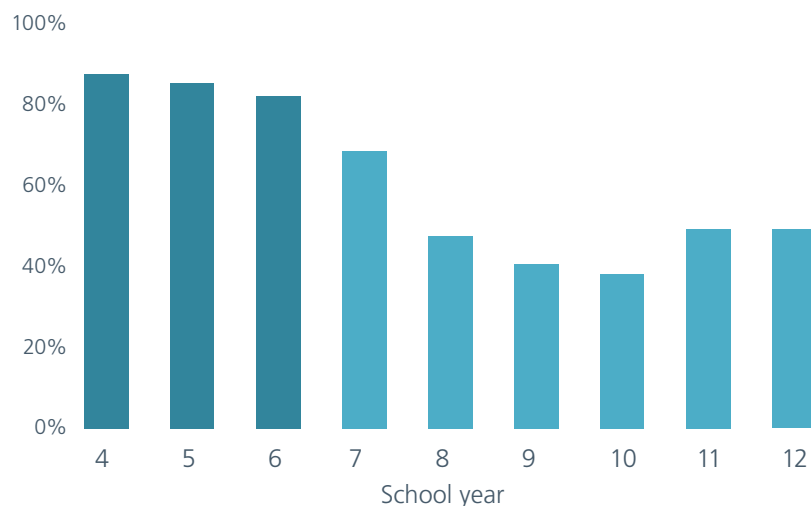
What the evidence says

Classroom management is something of an umbrella term encompassing a broad range of strategies, approaches and actions undertaken by teachers to encourage a safe, positive and stimulating learning environment for their students. This can make it difficult to define and measure the effectiveness of classroom management on students' learning.

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1   Note: The surveys involved separate questionnaires for primary and secondary students with differences in wording and so cannot be directly compared. Both surveys took place during Term 1, 2014.

Nevertheless, the evidence base addressing classroom management issues and strategies is extensive, with meta-analyses conducted as far back as the 1950s.

Research points to the positive effect of well-managed classrooms on:

- Student behaviour (effect size 0.71[2])
- Student engagement (effect size 0.62[3])
- Student achievement (effect size 0.52[4])

Classroom management is also known to affect the stress levels and attrition rates of new teachers in particular[5].

Effective classroom management can help lift student performance

According to data from PISA 2012, performance in mathematics is higher where students report that their math teachers are able to manage their classroom effectively (Graph 5.2).

Graph 5.2:

Students' views on their maths teachers' ability to manage the classroom's behaviour well and relationship with student performance, Australia, PISA 2012

Source: CESE analysis of PISA 2012 data.
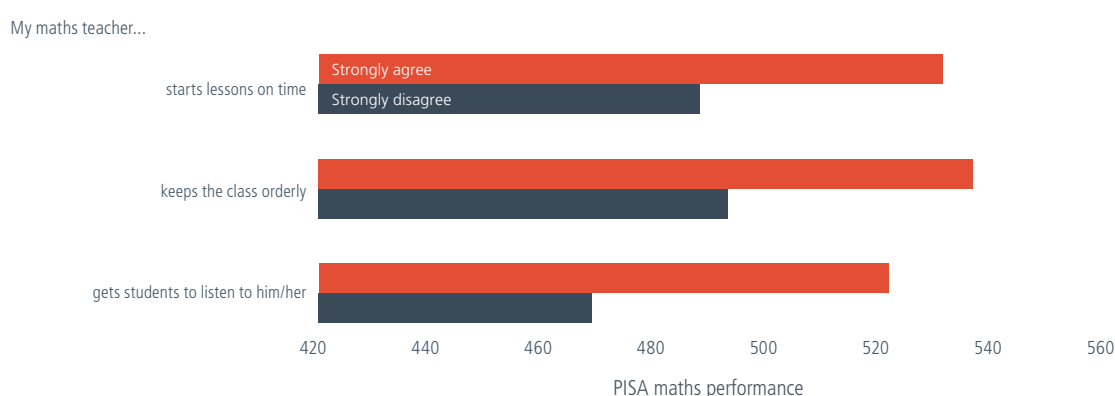
Ineffective classroom management impacts on time available for teaching

Many teachers report that managing student behaviour takes up a significant share of their time and energy that would otherwise be spent teaching. A recent Western Australian survey found that 39 per cent of respondents felt they spent 20 per cent of their classroom or work time on managing student behaviour, which equates to a full day a week[6].

Almost one-third (31 per cent) of NSW teachers participating in the Teaching and Learning International Survey (TALIS) reported that they lose quite a lot of time in lessons because of students' disruptive behaviour (Graph 5.3).

Graph 5.3:

Proportion of teachers agreeing whether selected components of classroom management apply to their classroom, NSW compared with Australia, TALIS 2013

Source: CESE analysis of TALIS 2013 data.
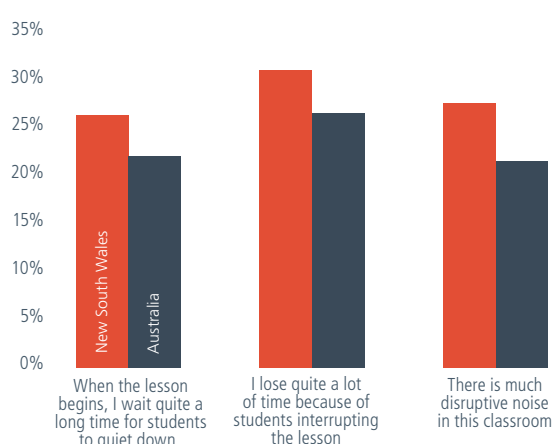
2   R Oliver, J Wehby and D Reschly 2011, 'Teacher classroom management practices: Effects on disruptive or aggressive student behaviour', *Campbell Systematic Reviews*, vol.4, p.5.
3   R Marzano, S Marzano and D Pickering 2003, *Classroom management that works: Research-based strategies for every teacher*, Association for Supervision and Curriculum Development, Virginia, p.10.
4   Marzano, Marzano and Pickering 2003, *Classroom management that works: Research-based strategies for every teacher,* p.10; and R Marzano 2001, 'A new era of school reform: Going where the research takes us', Mid-Continent Research for Education and Learning April.
5   See for instance, A Brouwers and W Tomic 2000, 'A longitudinal study of teacher burnout and perceived self-efficacy in classroom management', *Teaching and Teacher Education*, vol.16; S Kellam et al, 1998, 'The effect of the level of aggression in the first grade classroom on the course and malleability of aggressive behavior into middle school', *Development and Psychopathology*, vol.10, no.2; R Ingersoll and T Smith 2003, 'The wrong solution to the teacher shortage: Loss of new teachers plays a major role in the teacher shortage, but pouring more teachers into the system will not solve the retention problem', *Keeping Good Teachers*, vol.60, no.8; R Oliver and D Reschley 2007, *Effective classroom management: teacher preparation and professional development*, National Comprehensive Center for Teacher Quality, Washington, DC.
6   Western Australian Auditor General's Report 2014, *Behaviour management in schools*, Office of the Auditor General Western Australia, Perth, p.7.

New teachers in particular report receiving inadequate training in establishing positive classroom environments[7]. An Australian study of student teachers, conducted after their first practicum, reveals that respondents considered classroom issues to be 'the most difficult thing', and that student teachers want to be better equipped with management strategies before they start teaching[8].

Many teachers in the workforce have also highlighted classroom management as an area in which they would like more professional learning and development. In both the 2010 and 2013 SiAS surveys, teachers identified managing student behaviour as a key area in which more professional learning is needed (with 32.6 per cent of primary teachers and 28.2 per cent of high school teachers reporting a need for more learning in this area in 2013)[9].

Implications for teachers and schools

It is important that effective instruction in classroom organisation and management is provided to new and trainee teachers in particular. Effective instruction includes providing teachers with instructional approaches for classroom management through coursework and guided practice with feedback[10].

The evidence points to five key proactive strategies as being more effective than others to creating well-managed classrooms:

- Foster and maintain **student engagement** by including opportunities for active student participation in lessons

- Establish and teach **classroom rules** to communicate expectations for behaviour

- Build structure and **establish routines** to help guide students in a wide variety of situations

- **Reinforce** positive behaviour

- Consistently impose **consequences** for misbehaviour[11].

Further analysis of the research suggests that classroom management strategies are more effective when they are:

- Part of a school-wide approach to behaviour management[12]

- Built on positive teacher-student relationships[13]

- Implemented with fidelity[14].

> For more information, including a literature review, summaries of research into best-practice and evidence of what works, go to the CESE focus area: *Classroom Management*
> www.gtil.cese.nsw.gov.au/index.php/focus-areas/classroom-management

7   The review of teacher education and school induction for the Queensland Government concluded that universities don't teach essential skills of behaviour and classroom management: B Caldwell and D Sutton 2010, *Review of teacher education and school induction for the Queensland Government*, Second report – Full report, see esp. pp.8-15.
8   C Ure and J Lysk 2008, 'Professional learning in pre-service teacher education: Placement experience in graduate teacher education programs', Paper presented at the Australian Association for Research in Education Conference, 30 November-4 December.
9   McKenzie et al, *SiAS 2013* and McKenzie et al, *SiAS 2010*, Table 6.4 (both years).
10 R Oliver and D Reschley 2007, *Effective classroom management: teacher preparation and professional development*.
11 J Greenberg, H Putman, K Walsh 2013, *Training our future teachers: Classroom management*, National Council on Teacher Quality, Washington, DC.
12 M Epstein et al, 2008, *Reducing behavior problems in the elementary school classroom: A practice guide*, National Centre for Education Evaluation and Regional Assistance, Institute of Education Sciences, US Department of Education, Washington, DC.
13 J Cornelius-White 2007, 'Learner-centered teacher-student relationships are effective: A meta-analysis', *Review of Educational Research*, vol.77, no.1, pp.113-143.
14 R Detrich and T Lewis 2013, 'A decade of evidence-based education: Where are we and where do we need to go?', *Journal of Positive Behavior Interventions*, vol.15, no.4, pp.214-220.

6. Wellbeing

Key points

- Internationally, as well as in NSW, there is an increasing focus on student wellbeing, in recognition that the school years contribute to the development of the whole child, which in turn drives academic outcomes.

- Evidence suggests that higher levels of wellbeing are linked to higher academic achievement, Year 12 completion, better mental health and a more pro social and responsible lifestyle.

- Survey data from NSW reveals that students' social engagement decreases in later years of school.

Why it matters

Wellbeing is associated with better student outcomes, across a broad range of domains from academic achievement to mental health and responsible life choices. There is evidence that shows that students with higher levels of wellbeing are more likely to be higher academic achievers and complete Year 12, have better mental health and a more pro-social and responsible lifestyle[1]. Paying attention to student wellbeing also acknowledges the pivotal role of education in preparing students for a rewarding life beyond school.

The majority of NSW students surveyed recently reported that they were socially engaged, with positive friendships and a sense of belonging at school. Not all students, however, are equally likely to experience these facets of wellbeing. For example, girls report very different experiences at school in terms of connectedness, sense of belonging and anxiety throughout school. There is also evidence that students in low-SES schools report on average less positive teacher-student relationships.

Specific groups of students may also be more vulnerable to experiencing low levels of school connectedness, including those from different cultural and linguistic backgrounds, students with disabilities, and lesbian, gay, bisexual, and transgender students[2]. There are large inequalities related to institutional engagement of Aboriginal students across measures of positive behaviour, homework and attendance[3]. Just 55 per cent of Aboriginal students have a positive sense of belonging at school, compared with 64 per cent of non-Aboriginal students.

What the evidence says

There are a number of elements that affect student wellbeing identified in the literature, which can be grouped broadly into the following: creating a safe environment; ensuring connectedness; engaging students in learning; promoting social and emotional learning and a whole-school approach. These elements are all interconnected and should be viewed as interdependent aspects of wellbeing.

Schools need to offer students emotional as well as physical safety

A safe school is one where the physical environment does not lead to harm or injury for students, the emotional environment is a positive one, and a healthy lifestyle is promoted. An emotionally safe school environment means students feel safe to attend school and know they will be supported on an emotional level should they encounter any issues. In schools, the behaviour most likely to undermine a safe emotional

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1   For more detail on the research on wellbeing, see: Australian Catholic University and Erebus International 2008, *Scoping study into approaches to student wellbeing: Literature review*, report to the Department of Education, Employment and Workplace Relations, Canberra.
2   M Sulkowski, M Demaray and P Lazzarus 2012, 'Connecting students to school to support their emotional wellbeing and academic success', *NASP Communiqué*, vol.40, no.7.
3   D Willms 2014, *Student engagement in New South Wales secondary schools: Findings from the Tell Them From Me pilot*, The Learning Bar, New Brunswick.

space is bullying. Bullying can be physical, verbal or psychological, and is intended to cause fear, distress and/or harm to the victim. Many studies have shown the link between bullying others at school and later violent, antisocial and/or criminal behaviour. Students who are victims of bullying are more likely to display a range of mental health difficulties such as anxiety and depression[4]. Studies have found links between bullying and low academic achievement[5].

Students need to be emotionally, behaviourally and intellectually engaged with school for the best outcomes

Student engagement refers to the extent to which students identify with and value schooling outcomes, and participate in academic and non-academic school activities[6]. Measures of engagement may include: affective dimensions such as enjoyment of school and relationships with teachers and peers; cognitive measures such as academic performance or attainment; and behavioural dimensions such as attendance and participation in school activities[7].

Research over the last 30 years has increasingly shown that student engagement is not only an important outcome in itself, but it is also directly related to academic performance and future outcomes. For example, a 2009 American study of 78,106 students in 160 schools across eight states found that a one-percentage point increase in a student's engagement was associated with a six-point increase in reading achievement and an eight-point increase in maths achievement scores[8].

Other studies of student engagement have shown that increased student engagement has a flow-on effect in regard to educational and occupational success many years into the future. For example, an Australian study that used data from the Childhood Determinants of Adult Health study and a school engagement index, found that each unit of school engagement was independently associated with a ten per cent higher chance of achieving a post-compulsory school education at some point during the next 20 years, including as a mature age student. This was true over and above the influence of family background and personality[9].

Strong relationships amongst the broader school community support students' connectedness to school

School connectedness refers to students' sense of belonging, commitment to school, relationships with peers and teachers and opportunities to actively participate in the school community. More broadly, definitions of school connectedness can also include members of the extended school community[10]. Within the school environment, connectedness is realised and promoted in the quality of the relationships between students and their teachers, between students and the school, between students and other students, and between schools and the local community, including parents. Low levels of school connectedness in teenagers are linked to an increased likelihood of later problems with alcohol and drug use and other 'risk-taking' behaviours, mental health issues and violence. A Victorian longitudinal study found that students with low school connectedness in Year 8 were at higher risk of symptoms of anxiety/depression, regular smoking, drinking and using marijuana in later years of schooling[11]. Another study also found that students with low school connectedness are two to three times more likely to experience depressive symptoms compared with more connected peers[12].

4   Australian Catholic University and Erebus International 2008, *Scoping study into approaches to student wellbeing: Literature review* .
5   G Glew et al, 2005, 'Bullying, psychosocial adjustment, and academic performance in elementary school', *Archives of Pediatrics and Adolescent Medicine*, vol.159, no.11, pp.1026-1031.
6   D Willms 2003, *Student engagement at school: A sense of belonging and participation – Results from PISA 2000*, OECD Publishing, Paris.
7   J Abbott-Chapman et al, 2014, 'The longitudinal association of childhood school engagement with adult educational and occupational achievement: findings from an Australian national study', *British Educational Research Journal*, vol.40, no.1, pp.102-120.
8   Gallup Education 2014, *State of America's Schools: The path to winning again in education*, Gallup Inc., Washington DC.
9   Abbott-Chapman et al, 2014, 'The longitudinal association of childhood school engagement with adult educational and occupational achievement: findings from an Australian national study'.
10 Sulkowski, Demaray and Lazzarus 2012, 'Connecting students to school to support their emotional wellbeing and academic succe ss'.
11 Bond et al, 2007, 'Social and school connectedness in early secondary school as predictors of late teenage substance use, mental health, and academic outcomes', *Journal of Adolescent Health* vol.40, no.357.
12 S Glover et al, 1998, 'School environments and the emotional wellbeing of young people', *Family Matters*, no.49.

Teacher-student relationships may be the most critical of all relationships at school

Results from international surveys suggest that students who are in schools where teacher-student relationships and the learning climate are poor are more likely to have low levels of engagement with and at school. They are also more likely to arrive late for school, skip classes or days of school, report a weak sense of belonging and hold negative attitudes towards school[13]. As students progress through secondary school, they also face increasing complexity. Students consistently say that what most helped them thrive in spite of these challenges was the quality of the relationships they developed with adults in their schools[14]. This is backed up by the literature, as a meta-analysis of educational practices ranked positive student-teacher relationships in the top 20 (out of 138) strongest influences on student outcomes in terms of attitudes and achievement[15]. Marzano et al found that 'higher quality' teacher-student relationships led to 31 per cent fewer discipline and related problems than for those who had lower connectedness with their teachers[16]. International studies also show that levels of engagement vary among schools and suggest that the role of the classroom teacher may be as important, or even more important, than students' family background[17].

The majority of students in NSW government schools are positively engaged

A recent survey of NSW students found that the majority of students surveyed are engaged at school, with around three-quarters of students reporting positive friendships at school, and two-thirds having a sense of belonging at school. This sense of belonging is highest in the later primary years but declines in the early years of secondary school, before rising slightly towards the final years of schooling (Graph 6.1).

Graph 6.1:

Percentage of students with a positive sense of belonging, by school year, NSW government schools, 2014[18]

Source: Student feedback survey data.
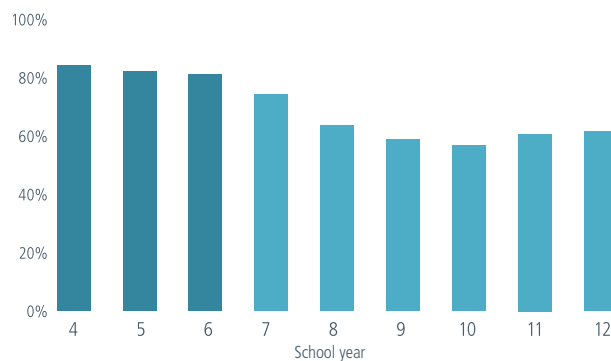
Girls and boys have very different experiences of school engagement and connectedness

Gender appears to make a difference to levels of student wellbeing and engagement. For example, girls are more likely than boys to comply with behavioural expectations at school (such as observing school rules and having positive attitudes towards homework), but are less likely to feel a positive sense of belonging throughout schooling. Girls are also more likely to report moderate or high levels of anxiety at school than boys, peaking in Year 9. Results from PISA also show that girls are more likely to report feeling anxious about maths, even when comparing girls and boys with similar performance in maths[19]. Girls are also less likely to report positive teacher-student relations in the early years of high school (Graph 6.2).

Graph 6.2:

Percentage of students with positive student-teacher relations, by school year, SES and gender, NSW government schools, 2013

Source: Student feedback survey data.

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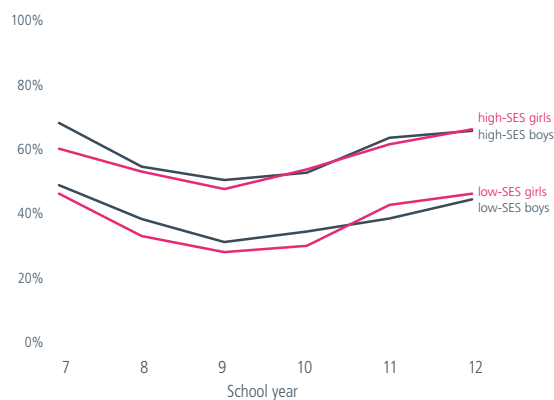
13 OECD 2013, *PISA 2012 Results – Ready to learn: students' engagement, drive and self-beliefs – volume III*, p.184.
14 J Dunleavy and P Milton 2009, *What did you do in school today? Exploring the concept of student engagement and its implications for teaching and learning in Canada*, Canadian Education Association, Toronto.
15 Hattie 2009, *Visible learning*, pp.118-119.
16 Marzano, Marzano and Pickering 2003, *Classroom management that works: Research-based strategies for increasing student achievement.*
17 D Willms, S Friesen and P Milton 2009, *What did you do in school today? Transforming classrooms through social, academic and intellectual engagement*, Canadian Education Association, Toronto.
18 Note: the surveys involved separate questionnaires for primary and secondary students with differences in wording and so cannot be directly compared. Both surveys took place during Term 1, 2014.
19 OECD 2013, *PISA 2012 Results – Ready to learn: students' engagement, drive and self-beliefs – volume III*, Table 7.22.

Teacher-student relationships could be more positive in New South Wales

Australian 15-year-old students surveyed in PISA in 2012 reported positive teacher-student relationships above the OECD average across all jurisdictions. However, NSW students were below the Australian average for all items[20].

In a recent survey piloted in New South Wales, students in Year 7 and Year 12 reported the most positive teacher-student relations. High-SES students have significantly better teacher-student relationships in all years, compared with low-SES students (Graph 6.2).

Implications for teachers and schools

The relationship between student wellbeing and engagement in learning is two-way – improving wellbeing can facilitate intellectual engagement, and improving intellectual engagement can also promote wellbeing.

Greater focus on positive teacher-student relationships

A focus on building positive teacher-student relationships can make a difference to students, particularly for low-SES students, as well as girls, who generally report less positive teacher-student relationships.

Making schools safe – bullying interventions work

A meta-analysis of 44 bullying evaluations found that overall, school-based, anti-bullying programs are effective. On average, bullying decreased by 20-23 per cent and victimisation decreased by 17-20 per cent in the programs evaluated[21]. The authors found in particular, that more intensive programs were more effective, as were programs including parent meetings, firm disciplinary methods, and improved playground supervision.

Compliant behaviour does not necessarily indicate wellbeing

Compliance does not mean the same thing as positive wellbeing and engagement at school. This is evidenced by the fact that while girls report compliance with school rules and positive homework behaviours, they also have higher anxiety and a lower sense of belonging. Teachers need to be attentive to all students and monitor the breadth of student wellbeing.

The importance of a whole-school approach

Student wellbeing cannot be viewed in isolation from the broader school context. School communities not only provide the defining context, they also have the potential to significantly influence wellbeing[22]. Critical elements to supporting wellbeing at the school level are: strong school leadership that emphasises and promotes the importance of wellbeing at the school and within the broader school community; and a culture of high expectations for all students with teachers who emphasise continuously improving[23]. In other words, wellbeing must be integrated into the school learning environment, the curriculum and pedagogy, the policies and procedures at schools, and the partnerships inherent within and outside schools including teachers, students, parents, support staff and community groups.

20 Thomson, De Bortoli and Buckley, *PISA 2012: How Australia measures up*, Table 8.15, Table 8.16.
21 M Ttofi and D Farrington 2010, 'Effectiveness of school-based programs to reduce bullying: A systematic and meta-analytic review', *Journal of Experimental Criminology*, vol.7, no.1.
22 J Fraillon 2004, *Measuring student well-being in the context of Australian schooling: Discussion paper*, commissioned by the South Australian Department of Education and Children's Services as an agent of the Ministerial Council on Education, Employment, Training and Youth Affairs.
23 Australian Catholic University and Erebus International 2008, *Scoping study into approaches to student wellbeing: Literature review*.

7. Collaboration

Key points

- Great teachers don't just happen; they are developed and keep on developing throughout their professional life.

- Effective collaboration is key to sharing successful and innovative teaching practices across the teaching profession.

- Not all collaboration is effective. Teachers need to engage in professionalised collaboration that explicitly aims to improve teacher practices and student outcomes.

- A whole of school focus is needed to develop a culture of excellence. School leaders need to support teachers' professional learning, take a central role in collaborative networks and work to identify the strengths and weaknesses of teaching at their school.

Why it matters

Some professionals, such as doctors or lawyers, have the benefit of seeing their peers in action as part of their day-to-day environments, and can see first-hand what works. Teachers, however, need to work harder than many to break down the potential 'silo effect' and ensure that best practice is identified and shared across classrooms.

What the evidence says

International education researchers point to collaborative practices between teachers within and across schools as important features of many high-performing schooling systems[1]. In countries such as Finland and Japan, for example, teachers are encouraged to work together, including through planning lessons jointly, observing each other's lessons, and helping each other improve[2].

To put it simply: great teachers don't just happen; they are developed. *Great Teaching, Inspired Learning*, the NSW Government's plan to improve the quality of teaching and learning across the State's schools, recognises teacher professional learning as critical to improving teacher quality and student outcomes[3]. The research paper supporting this initiative highlights the extensive evidence showing that teacher quality impacts significantly on students' learning and the role professional learning and collaborative practice can play in improving teacher quality[4].

It can be difficult, however, to measure the effect of different professional learning approaches and broad ideas like collaboration. In particular, there is a lack of robust studies focussing on how teacher professional development programs impact on student outcomes[5].

1 Barber and Mourshed 2007, *How the world's best-performing school systems come out on top*; Mourshed et al, 2010, *How the world's most improved school systems keep getting better*; and L Stoll et al, 2012, *Great professional development which leads to great pedagogy: nine claims from the research*, research theme two, National College for School Leadership, Nottingham.
2 Barber and Mourshed 2007, *How the world's best-performing school systems come out on top*; and Mourshed et al, 2010, *How the world's most improved school systems keep getting better*.
3 NSW Government 2013, *Great Teaching, Inspired Learning: a blueprint for action*.
4 CESE 2013, *Great Teaching, Inspired Learning: What does the evidence tell us about effective teaching?* Research report, NSW Department of Education and Communities, Sydney.
5 CESE 2014, *The elements of effective professional development*, Literature Review, NSW Department of Education and Communities, Sydney.

Great teachers learn from other teachers

Teachers observing other teachers' classrooms can take place as part of a structured professional learning approach, as happens in Shanghai 'teaching and research groups'[6], or can take place in a more informal way[7].

According to the OECD Teaching and Learning International Survey (TALIS), while NSW teachers report high levels of engagement with certain collaborative practices, fewer NSW teachers reported observing other teachers' classes and providing feedback or teaching jointly at least once a month compared with Australia as a whole, and some other countries, such as Singapore (Graph 7.1).

Graph 7.1:

Whether teachers regularly undertake selected collaboration activities, NSW compared with Australia and Singapore[8], TALIS 2013

Source: CESE analysis of TALIS 2013 data.
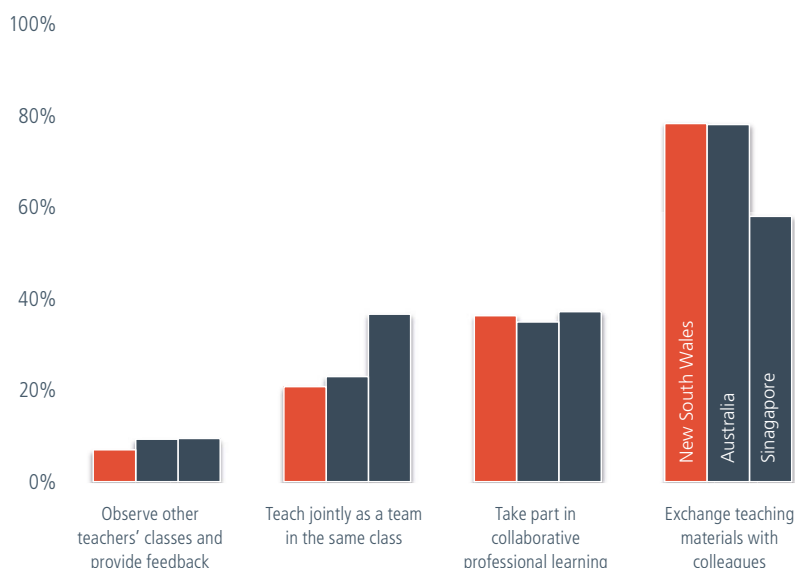
Professional learning activities that focus on observing the practices of other teachers also need effective feedback processes to improve teacher performance. The observation process needs to explicitly consider how different teaching approaches are impacting on students' learning in the classroom. A recent Grattan Institute report suggested that effective systems of teacher appraisal and feedback that are directly linked to improved student performance can increase teacher effectiveness by up to 30 per cent[9].

On average across countries participating in TALIS, many teachers report positive impacts following feedback (formal and informal) they received about their work. However, compared with other countries, fewer teachers in Australia reported that the feedback they received led to positive changes in their teaching practices (45 per cent in Australia compared with 62 per cent in other countries)[10]. This suggests feedback processes being used in Australia are not as effective as they could be in helping teachers understand and act on their strengths and weaknesses.

6   B Jensen et al, 2012, *Catching up: Learning from the best school systems in East Asia*, Grattan Institute, Melbourne, p.90.
7   The Australian Teacher Performance and Development Framework recognises observation of teacher practice as an essential component of teachers' development process: see Australian Institute for Teaching and School Leadership (AITSL) 2012, *Australian Teacher Performance and Development Framework*. In New South Wales, observing a colleague's lesson is a teacher-identified activity that counts towards the professional development requirements for maintaining Proficient Teacher accreditation: see The Board of Studies, Teaching and Educational Standards NSW (BOSTES), *Teacher accreditation*, viewed 29 September 2014, http://www.nswteachers.nsw.edu.au/current-teachers/maintain-proficient-teacher-accreditation/what-types-of-pd-count/; and also the *Teacher Identified Continuing Professional Development Policy* http://www.nswteachers.nsw.edu.au/DownloadDocument.ashx?DocumentID=1129.
8   Note: this analysis is only possible for a sub-set of countries participating in TALIS. Singapore has been selected as an example of a high-performing country.
9   B Jensen and J Reichl 2011, *Better teacher appraisal and feedback: improving performance*, Grattan Institute, Melbourne, p.3.
10   OECD 2013, *Results from TALIS 2013: Country Note – Australia*, OECD Publishing, Paris.

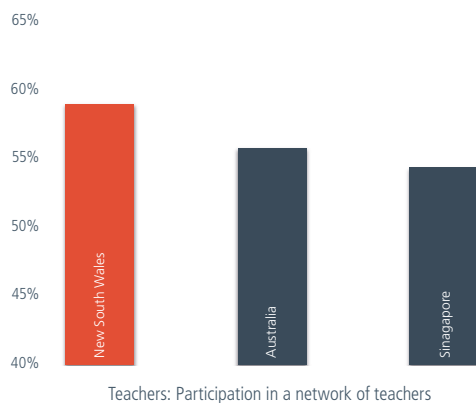## Professional networks and professional learning communities can be beneficial

Some literature reviews on the impact of professional development on student outcomes emphasise the importance of creating professional learning communities[11]. Overall, the evidence base on the effectiveness of professional learning communities is mixed.

According to TALIS data, more than half (58 per cent) of NSW teachers reported being part of a network of teachers. This was higher than the Australian total, and higher than some other countries, such as Singapore (Graph 7.2).

Graph 7.2:

Proportion of teachers regularly participating in a network of teachers, NSW compared with Australia and Singapore[12], TALIS 2013

Source: CESE analysis of TALIS 2013 data.

Teachers: Participation in a network of teachers

In Australia, Gore and colleagues have been developing Quality Teaching Rounds (QTR), a form of professional development that involves guided reading, discussion and observation by teachers who are members of a 'professional learning community'. Although not yet finalised, evaluations show the QTR are correlated with improvements in teaching, teacher satisfaction and student outcomes (effect sizes have been high for teaching quality and teacher satisfaction)[13].

However, professional learning communities can be associated with negative effects on student outcomes in the evidence base. A synthesis of 72 studies concluded that counterproductive professional learning communities can 'reinforce existing deficit thinking and structural inequalities'[14].

Hattie suggests that professional learning communities may work to improve student outcomes, but they are generally not sufficient by themselves. While these communities can work, they tend to need an additional factor (a person or process) to challenge problematic beliefs, test the efficacy of competing ideas, and ground discussions in student outcomes[15]. Other leading researchers agree that for professional learning communities to be effective, the communities need to focus continually on improving student outcomes, and include experts who will work to ensure teaching practice is continually linked to student outcomes as well as challenge entrenched beliefs[16].

School leadership and whole-of-school environment matters

International education researchers have claimed that school leadership has an impact on students' outcomes second only to that of teachers in the classroom[17].

Evidence suggests that positive student outcomes are more likely to be achieved if professional development is supported by the wider school community[18]. If teachers are not supported in the implementation of new strategies, professional development has a reduced impact[19]. Teachers need the 'organisational support of their schools in terms of evidence base, collective goals to aim for, and

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11 Menter et al, 2010, *Literature review on teacher education in the 21st century*, Scottish Government Social Research, Edinburgh; R Bolam and D Weindling 2006, *Synthesis of research and evaluation projects concerned with capacity-building through teachers' professional development*, General Teaching Council England (now abolished), London; L Desimone 2009, 'Improving impact studies of teachers' professional development: Towards better conceptualizations and measures', *Educational Researcher*, vol.38, no.3, pp.181-99.
12 Note: this analysis is only possible for a sub-set of countries participating in TALIS. Singapore has been selected as an example of a high-performing country.
13 CESE 2013, *Great Teaching, Inspired Learning: What does the evidence tell us about effective teaching?*, Research report, p.16.
14 A Alton-Lee 2011, '(Using) evidence for educational improvement', *Cambridge Journal of Education* vol.41, no.3, p.311.
15 Hattie 2009, *Visible learning*, p.121.
16 H Timperley 2008, *Teacher professional learning and development*, Educational Practices Series vol.18, UNESCO International Bureau of Education, p.19.
17 Barber and Mourshed 2007, *How the world's best-performing school systems come out on top*, p.29.
18 M Garet et al, 2001, 'What makes professional development effective? Results from a national sample of teachers', *American Educational Research Journal*, vol.38, no.4, pp.927, 931; and L Stoll et al, 2012, *Great professional development which leads to great pedagogy: nine claims from the research*, p.8.
19 L Darling-Hammond et al, 2009, *Professional learning in the learning profession: A status report on teacher development in the United States and abroad*, National Staff Development Council, Dallas, p.10.

circumstances that continue to motivate improvement' in order to enact sustainable improvements in student outcomes[20].

In order to help improve teaching practices at their school, school leaders need to become leaders of learning and be responsible for facilitating and encouraging participation in professional learning activities[21].

Implications for teachers and schools

The evidence supports a broad range of collaborative approaches that can and should be integrated and embedded in ongoing professional learning across the teaching profession.

• **Focus on students' outcomes** – teachers' professional learning and development needs to centre first and foremost on students' needs and improving learning outcomes.

• **Open classrooms** – teachers should 'open their classrooms' to one another, be prepared to evaluate other teachers and be evaluated, and support the broad aim of working together to improve the quality of teaching across the whole profession. Structured teacher observation can support the testing of new and innovative teaching approaches by assessing how effectively they work in the classroom.

• **Use external expertise** – professional networks should include components of external expertise to ensure that best practice models are identified through a process of critical validation.

• **Have a whole-of-school focus** – school leaders need to successfully create a culture in which collaborative planning, reflection on instruction and peer coaching are embedded in everyday school life, so that teachers are supported, and support one another, to continuously develop their skills and knowledge.

20 H Timperley et al, 2007, *Teacher professional learning and development: Best evidence synthesis iteration*, New Zealand Ministry of Education, Wellington, p.xlvi.
21 P Pont et al, 2008, *Improving School Leadership: volume 1 – policy and practice*, OECD Publishing, Paris, p.26.

8. Helpful websites for further information

The Professional Learning Clearinghouse:

http://gtil.cese.nsw.gov.au/

The Professional Learning Clearinghouse provides teachers and school leaders with easy access to robust education research on effective professional learning and classroom teaching strategies. The website focuses on strategies that have shown success in improving student outcomes.

The Clearinghouse is designed to support teachers and school leaders to make evidence-based decisions about professional development and classroom teaching strategies. The Clearinghouse was developed in 2014 by the Centre for Education Statistics and Evaluation (CESE) in the NSW Department of Education and Communities. It arose out of the NSW Government's Great Teaching, Inspired Learning blueprint.

Effective practices in literacy and numeracy:

http://www.cese.nsw.gov.au/EffectivePractices

This resource presents research evidence and examples from NSW schools that illustrate effective practices for school improvement, particularly in literacy and numeracy.

It identifies nine 'domains' of effective practice, featured in the National School Improvement Tool. These are brought to life with practical advice for principals and teachers, a wealth of national and international research evidence, plus real examples from New South Wales of successful teaching and learning at the whole school, classroom and student level. Independent evaluation evidence gathered in New South Wales suggests that these domains are closely inter-related. They are most effective when implemented as a coordinated suite of initiatives.

This resource was developed through the NSW Smarter Schools National Partnerships – jointly funded by the Commonwealth and NSW State Governments – and supported by the NSW Department of Education and Communities, the Catholic Education Commission NSW and the Association of Independent Schools of NSW.

The evaluation repository:

http://www.cese.nsw.gov.au/cese-sites/evaluation-repository

The evaluation repository provides a single access point to evaluation reports commissioned on the programs and initiatives that have been provided by the NSW Department of Education and Communities. The evaluation evidence covers the whole spectrum of education from early childhood learning and schooling to vocational education and training.

While some evaluations have been undertaken by independent external consultants, others have been conducted in-house by specialist research and evaluation units within the Department.

The repository is fully categorized and searchable by subject area, keywords and year of publication.

The repository will be regularly updated with evaluation reports that are published by directorates and portfolio areas.

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