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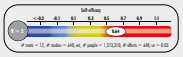
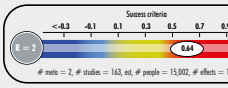
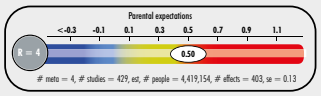




A GUIDE TO VISIBLE LEARNING

VISIBLE LEARNING IN THEORY AND PRACTICE



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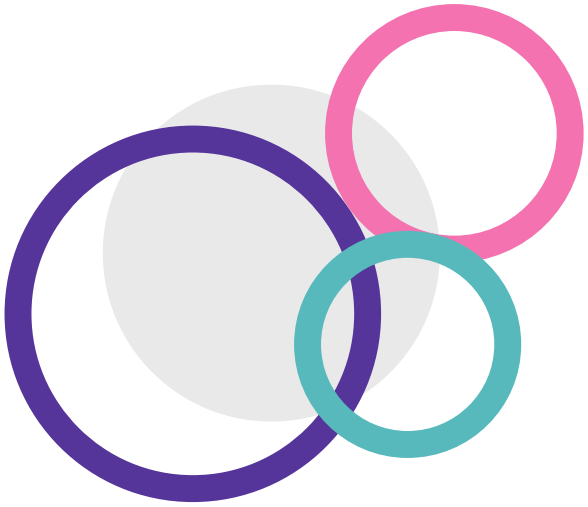

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INTRODUCTION

A GUIDE TO VISIBLE LEARNING

Whether you've never heard of Professor John Hattie and Visible Learning or you've read everything John Hattie's ever written, odds are you will benefit from learning about or refreshing your knowledge of Visible Learning.

Visible learning as a concept is incredibly simple: it aims to make student learning as visible as possible. Throughout three decades of empirical education research, John Hattie has published bestselling books that explore the science of learning and how it can be applied to improve educational systems and individual student outcomes.

His first book Visible Learning was described in 2008 by the Times Education Supplement as "education's equivalent to the search for the Holy Grail". It was the culmination of 15 years of research into the influences on achievement in school-aged students. In 2011 he followed up with Visible Learning for Teachers to bring the ground-breaking concepts to a new audience of school teachers by delving deeper into pupil motivation, curriculum, meta-cognitive strategies, behavior, teaching strategies and classroom management. Several other bestsellers followed connecting Visible Learning to cutting edge cognitive science and focusing on specific aspects of the research such as feedback and teacher mindframes. In 2023 he returns to his ground-breaking work with Visible Learning – The Sequel. In it he reflects on how his work has been understood - and at times misunderstood - and explores what future directions research should take In total, Hattie's books are informed by over 130,000 studies involving 400 million students globally.

This free guide contains five key chapters from these books and introduces some of the most important features that will help teachers to see the effects of what they do in the classroom so that they can increase their impact and make a real difference to their students.

CHAPTER 1 – WHAT IS VISIBLE LEARNING?

This chapter provides an overview of the Visible Learning project, the culmination of over 30 years work, synthesizing over 95,000 studies involving more than 300 million students globally that explains the most significant evidence-based ideas about what actually works in schools.

CHAPTER 2 - TEACHERS: THE MAJOR PLAYERS IN THE EDUCATION PROCESS

Taken from John Hattie's bestselling *Visible Learning for Teachers*, this chapter outlines why teachers are the major players in the education process and explains the key characteristics of those teachers that research shows make the greatest difference.

INTRODUCTION

A GUIDE TO VISIBLE LEARNING

CHAPTER 3 - I AM AN EVALUATOR OF MY IMPACT ONSTUDENT LEARNING

Taken from *10 Mindframes for Visible Learning*, this chapter discusses educational expertise and how it is shown. One of the most crucial questions is whether teachers want to know about their impact and make it visible. Teachers who have set themselves this goal and are consistently trying to implement it are fundamentally different from teachers who do not ask themselves this question.

CHAPTER 4 - THE ROLE OF FEEDBACK

Feedback is arguably the most critical and powerful aspect of teaching and learning. Yet, there remains a paradox: why is feedback so powerful and why is it so variable? This chapter from *Visible Learning and the Science of How We Learn* looks at how communication between the student and teacher can often break down and what can be done to make the feedback process more effective.

CHAPTER 5- THE CHALLENGE

The final chapter brings you right up to date with the latest developments in the Visible Learning story. Taken from *Visible Learning: The Sequel* (2023) John Hattie outlines the key challenges educators face today and what has changed over the past 15 years since his original ground-breaking book was published.

Please note that because this FreeBook is composed of excerpts from several Visible Learning books, you may see references to other books or chapters that are not included. To delve deeper into any of the ideas or concepts laid out in these chapters you can purchase these books at https://www.routledge.com/go/visible-learning-books.

Some references from the original chapters have not been included in this text. For a fully referenced version of each chapter, including footnotes, bibliographies, and endnotes, please see the published title.

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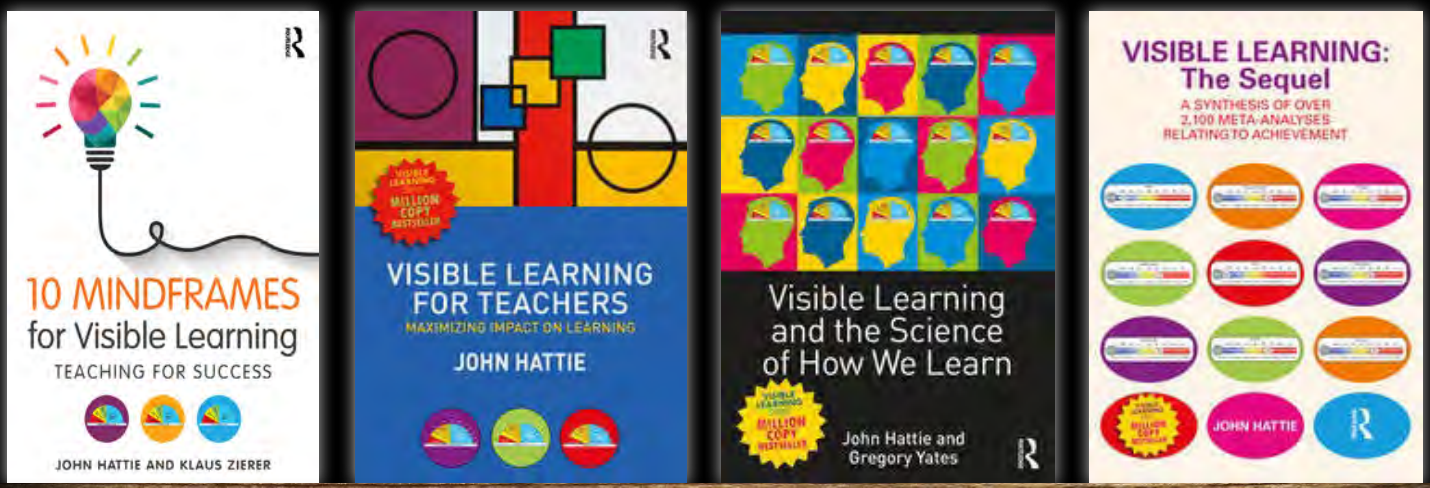

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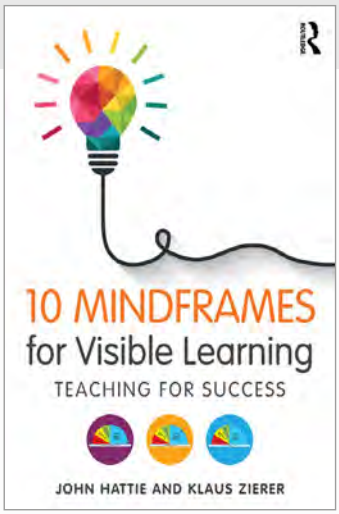
CHAPTER

1 WHAT IS VISIBLE LEARNING?



This chapter is excerpted from

10 Mindframes for Visible Learning: Teaching for Success

By John Hattie and Klaus Zierer

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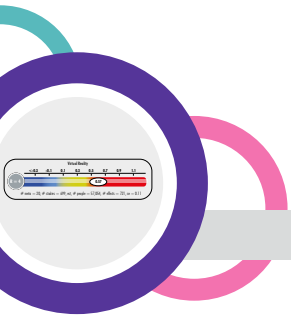


WHAT IS VISIBLE LEARNING?

John Hattie and Klaus Zierer

Excerpted from *10 Mindframes for Visible Learning: Teaching for Success*

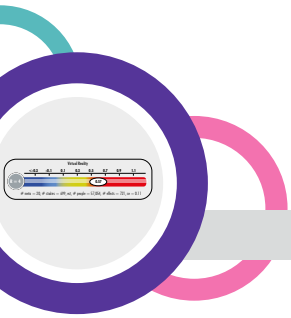
WHAT IS VISIBLE LEARNING?

The work on the original Visible Learning meta-study took more than 15 to 20 years to complete. It involved analysing more than 800 meta-analyses composing around 80,000 studies in which an estimated (because the number of test subjects is not always stated in the meta-analyses) 250 million learners took part – and, as just noted, the work on the Visible Learning project is not yet finished: A total of more than 1,400 meta-analyses now have been analyzed to date, but little has changed about the main messages of the study.

Only meta-analyses relating the achievement outcomes are considered. Others are doing similar work with respect to emotional and motivational outcomes (Korpershoek et al., 2016), how we teach (Hattie & Donoghue, 2016), and special education students (Mitchell, 2014), and it would be wonderful if there were meta-syntheses on retention to the last years of schooling, and physical and nutritional outcomes.

Visible Learning seeks to get to the crux of this multitude of findings from educational research and identify the main messages by synthesizing meta-analyses. The aim is to move from "what works" to "what works best" and when, for whom, and why. The search to understand these moderators (when, whom, why) was key in the search, and that there were so few moderators was quite surprising. The search involved first generating around 150 factors from the underlying meta-analyses, such as "class size," "teacher-student relationships," "direct instruction," and "feedback," and then determining their effect size, which can be calculated via comparing the averages of two conditions (e.g. a new vs. older curriculum, reducing class size from 25–30 to 15–20) or by comparing students over time after some intervention. The beauty of effect sizes is that, once computed, they can be reasonably compared across many interventions. There are many excellent sources for understanding effect sizes (Coe, 2012; Lipsey & Wilson, 2001). Like every other method, meta-analyses – and especially the innovative attempt in Visible Learning to construct a synthesis of meta-analyses – are, of course, not without their flaws, and it is, therefore, important to refer to some of these criticisms (cf. Snook et al., 2009; Zierer, 2016b).

The various influences generated from the multiple meta-analyses can be assigned to various domains: learners, family, school, teacher, curriculum, and teaching. The table below provides a summary of the procedure as a whole.



WHAT IS VISIBLE LEARNING?

John Hattie and Klaus Zierer

Excerpted from *10 Mindframes for Visible Learning: Teaching for Success*

This summary already reveals an important finding: There are domains that have been the topic of much research, such as teaching, and domains that have been the topic of fewer research syntheses, such as family. As important, there can be great variation in the dispersion of effect sizes within the domains: Whereas most of the factors in the domain of school, for instance, are clustered around an effect size of 0.2, the factors in the domain of teacher achieve effect sizes between 0.12 ("teacher education") and 0.90 ("teacher credibility"). Understanding this variance is important to building the case for the importance of teacher mind frames as one of the critical underlying factors underlying these many influences.

Across the 800 meta-analyses included in the meta-study, the variability of the effects can be shown in the following distribution (see Figure 1.1).

	FACTORS	META-ANALYSES	STUDIES	OVERALL EFFECT SIZE
Learners	19	152	11,909	0.39
Family	7	40	2,347	0.31
School	32	115	4,688	0.23
Teacher	12	41	2,452	0.47
Curriculum	25	135	10,129	0.45
Teaching	55	412	28,642	0.43

Table 1.1

WHAT IS VISIBLE LEARNING?

John Hattie and Klaus Zierer

Excerpted from *10 Mindframes for Visible Learning: Teaching for Success*

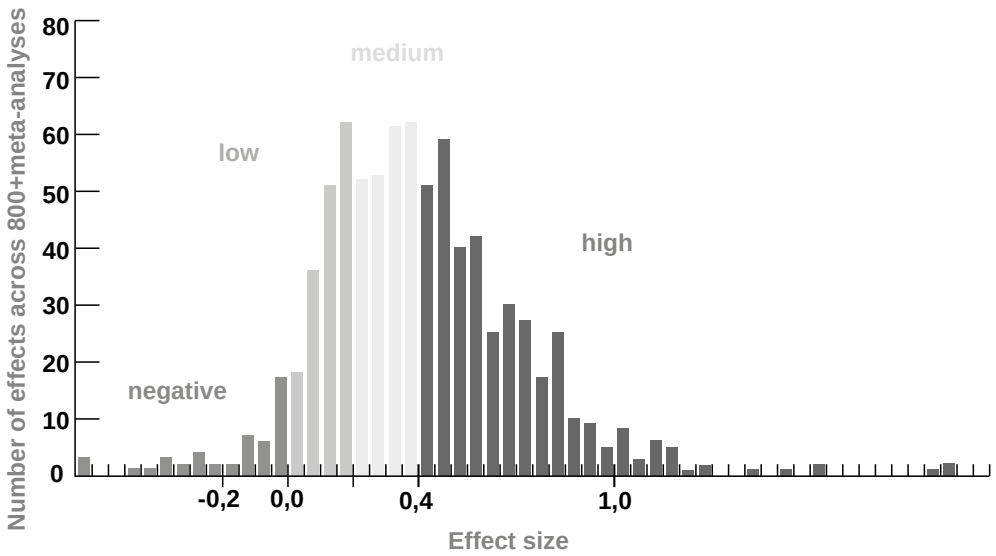


Figure 1.1 Distribution of effect size. Source: Hattie and Zierer (2017).

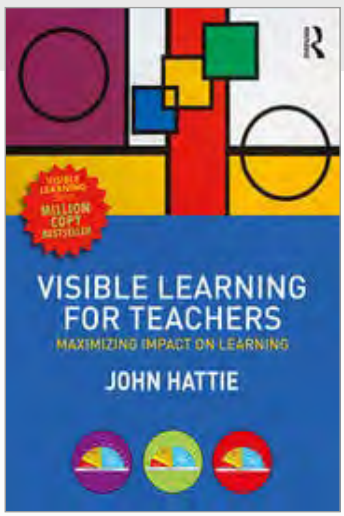
In many ways, this distribution shows that practically everything that happens in school and the classroom can lead to an increase in academic performance. To put it another way, 90 to 95 percent of what we do to learners increases their achievement. One might think that this would reassure us teachers, but that is not the case. The only thing this result illustrates is that people are learning all the time – sometimes despite us. This helps explain why almost everyone can claim "evidence" for their favourite influence. In many senses, you cannot prevent learning.

The key notion, however, is that we should be asking about the story underlying those influences greater than the average effect com-pared with those influences below the average effect (but still positive). This is the Visible Learning story and has been well rehearsed in other Visible Learning books and not recited here. The question this book addresses is related to the one big critical idea underlying success in making a difference to the learning lives of students – the mindframes of the educators.

CHAPTER

2

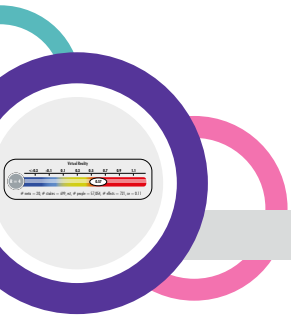
TEACHERS: THE MAJOR PLAYERS IN THE EDUCATION PROCESS



This chapter is excerpted from

Visible Learning for Teachers: Maximizing Impact on Learning

By John Hattie



TEACHERS

THE MAJOR PLAYERS IN THE EDUCATION PROCESS

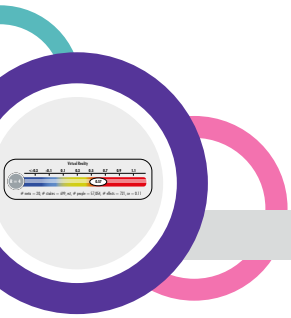
John Hattie

Excerpted from *Visible Learning for Teachers*

It might have seemed more obvious to start with the students, but that would not be the correct place to start! We so often make claims about students, their learning styles, their attitudes, their love or not of schooling, their families and backgrounds, and their culture. In so many cases, this discussion is about why we can or cannot have an effect on their learning.

We so often worry about who students are. While it is the case that the largest source of variance in learning outcomes is attributable to the students, this should not mean that we stop at what students can and cannot do. We invent so many ways in which to explain why students cannot learn: it is their learning styles; it is right or left brain strengths or deficits; it is lack of attention; it is their refusal to take their medication; it is their lack of motivation; it is their parents not being supportive; it is because they do not do their work, and so on. It is not that these explanations are wrong (although some are – there is no support for learning styles, for example) or right (parental expectations and encouragement are powerful factors), but the underlying premise of most of these claims is the belief that we, as educators, cannot change the student. It is this belief that is at the root of deficit thinking. The belief that background factors have the strongest influence on learning would be an argument for putting more resources into poverty and home programs rather than into schooling. We must consider ourselves positive change agents for the students who come to us – for most, it is compulsory that they come to school and sometimes they come reluctantly, but mostly (at least initially) students are eager to be challenged into learning. My point is that teachers' beliefs and commitments are the greatest influence on student achievement over which we can have some control.

We so often worry about what teachers do. It would be easy to say that it is 'teachers who make the difference'. This is, indeed, not the case being made in this book. There are just as many teacher influences below d = 0.40 as there are above, and in most school systems there is more variance within a school than between schools. This within-school variance highlights the variance provided by teacher effects, and while we may wish to believe that all of our teachers are excellent, this is not always the view of those who have been their students. Rather, there are some teachers doing some things that make the difference. The effect of high-effect teachers compared with low-effect teachers is about d = 0.25, which means that a student in a high-impact teacher's classroom has almost a year's advantage over his or her peers in a lower-effect teacher's classroom (Slater, Davies, & Burgess, 2009).A major claim in this chapter is that the differences between high-effect and low-effect teachers are primarily related to the attitudes and expectations that teachers have when they



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John Hattie

Excerpted from *Visible Learning for Teachers*

decide on the key issues of teaching – that is, what to teach and at what level of difficulty, and their understandings of progress and of the effects of their teaching. It is some teachers doing some things with a certain attitude or belief system that truly makes the difference. This brings me to the first set of attributes that relate to 'visible learning inside': passionate and inspired teachers.

We start with the teachers' and school leaders' mind frames. For example, Sam Smith (2009) introduced a very powerful target-setting program in a large urban high school, and many of the teachers refused to participate, claiming that they were not responsible for whether students met targets or not: 'If they did not do their homework, failed to complete assignments, did not attend class, then why should teachers be held responsible for students meeting targets?' The teachers argued that teacher targets were related more to ensuring coverage of the curriculum, providing worthwhile resources and activities, and ensuring order and fairness in the classroom.

Russell Bishop (2003) has provided one of the most effective interventions available for minority students in mainstream classrooms and he starts with the beliefs of teachers. He argued that teachers come into classrooms with very strong theories about students and often resist evidence that their students do not conform to these theories. These teachers have theories about race, culture, learning, development, and students' levels of performance and rates of progress. One of the first acts in Bishop's intervention is to survey students' views on these matters. He then shows the teachers the difference between the students' beliefs and the teachers' own. Only then can Bishop start the intervention, which is about teachers' beliefs, first and foremost.

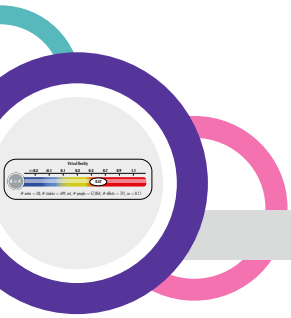
VISIBLE LEARNING – CHECKLIST FOR INSPIRED AND PASSIONATE TEACHING

1. All adults in this school recognize that:

   a. there is variation among teachers in their impact on student learning and achievement;

   b. all (school leaders, teachers, parents, students) place high value on having major positive effects on all students; and

   c. all are vigilant about building expertise to create positive effects on achievement for all students.



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John Hattie

Excerpted from *Visible Learning for Teachers*

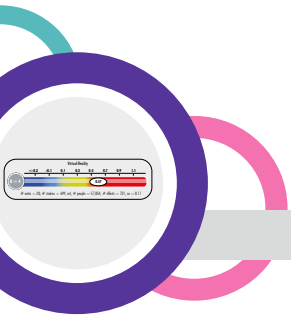
THE CASE FOR THE PASSIONATE, INSPIRED TEACHER

VISIBLE LEARNING – CHECKLIST FOR INSPIRED AND PASSIONATE TEACHING

2. This school has convincing evidence that all of its teachers are passionate and inspired – and this should be the major promotion attribute of this school.

One of the more exciting periods of my research work was when I was at the University of North Carolina working with Richard Jaeger, Lloyd Bond, and many others on the technical issues relating to the National Board for Professional Teaching Standards (NBPTS). Laurence Ingvarson and I recently edited a book about this exciting time, and the breakthroughs in performance assessment in education, the development of scoring rubrics, and the psychometrics relating to these issues that have truly changed our way of looking at teachers, classrooms, and identification of excellence (see Ingvarson & Hattie, 2008). The NBPTS is still, in my estimation, the best system for dependably identifying excellent teachers, although there is still much to do to improve it. Using multiple indicators of the effect of teachers on students, moving away from evaluating the correlates as opposed to the actual effects on students, and making sure that the evaluation methods are also excellent professional development is at the heart of the NBPTS model. This chapter, however, is not a review of the NBPTS, because there are other sources and websites that can provide this background. Instead, one study is highlighted that underlines the importance of passionate and inspired teachers.

Richard Jaeger and I started by reviewing the literature (in the more traditional way than that used when undertaking a meta-analysis) on the distinctions between expert and experienced teachers, rather than using the more usual distinction between experienced and novice teachers. We sent our findings to many of the pre-eminent researchers in this field, and to expert teachers, for their comment, changes, and input .We identified five major dimensions of excellent, or 'expert', teachers. Expert teachers have high levels of knowledge and understanding of the subjects that they teach, can guide learning to desirable surface and deep outcomes, can successfully monitor learning and provide feedback that assists students to progress, can attend to the more attitudinal attributes of learning (especially developing self-efficacy and mastery motivation), and can provide defensible evidence of positive impacts of the teaching on student learning. Herein lies the differences between the terms 'expert' and 'experienced'.



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THE MAJOR PLAYERS IN THE EDUCATION PROCESS

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VISIBLE LEARNING – CHECKLIST FOR INSPIRED AND PASSIONATE TEACHING

3. This school has a professional development program that:

   a. enhances teachers' deeper understandings of their subject(s);

   b. supports learning through analyses of the teachers' classroom interactions with students;

   c. helps teachers to know how to provide effective feedback;

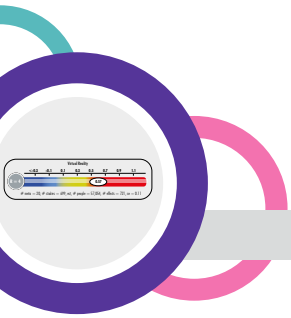
   d. attends to students' affective attributes; and

   e. develops the teacher's ability to influence students' surface and deep learning.

A. EXPERT TEACHERS CAN IDENTIFY THE MOST IMPORTANT WAYS IN WHICH TO REPRESENT THE SUBJECT THAT THEY TEACH

In *Visible Learning*, it was shown that teachers' subject-matter knowledge had little effect on the quality of student outcomes! The distinction, however, is less the 'amount' of knowledge and less the 'pedagogical content knowledge', but more about how teachers see the surface and the deeper understandings of the subjects that they teach, as well as their beliefs about how to teach and understand when students are learning and have learned the subject. Expert teachers and experienced teachers do not differ in the amount of knowledge that they have about curriculum matters or knowledge about teaching strategies – but expert teachers do differ in how they organize and use this content knowledge. Experts possess knowledge that is more integrated, in that they combine the introduction of new subject knowledge with students' prior knowledge; they can relate current lesson content to other subjects in the curriculum; and they make lessons uniquely their own by changing, combining, and adding to the lessons according to their students' needs and their own teaching goals.

As a consequence of the way in which they view and organize their approach, expert teachers can quickly recognize sequences of events occurring in the classroom that in some way affect the learning and teaching of a topic. They can detect and concentrate more on information that has most relevance, they can make better predictions based on their representations about the classroom, and they can identify



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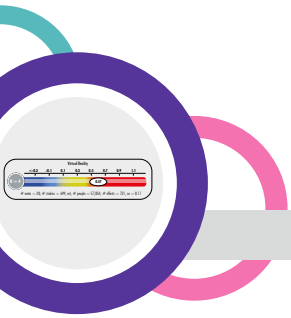
a greater store of strategies that students might use when solving a particular problem. They are therefore able to predict and determine the types of error that students might make, and thus they can be much more responsive to students. This allows expert teachers to build understandings as to the how and why of student success. They are more able to reorganize their problem-solving in light of ongoing classroom activities, they can readily formulate a more extensive range of likely solutions, and they are more able to check and test out their hypotheses or strategies. They seek negative evidence about their impact (who has not learnt, who is not making progress) in the hurly-burly of the classroom, and use it to make adaptations and to problem-solve.

These teachers maintain a passionate belief that students can learn the content and understandings included in the learning intentions of the lesson(s). This claim about the ability to have a deep understanding of the various relationships also helps to explain why some teachers are often anchored in the details of the classroom, and find it hard to think outside the specifics of their classrooms and students. Generalization is not always their strength.

B. EXPERT TEACHERS ARE PROFICIENT AT CREATING AN OPTIMAL CLASSROOM CLIMATE FOR LEARNING

An optimal classroom climate for learning is one that generates an atmosphere of trust – a climate in which it is understood that it is okay to make mistakes, because mistakes are the essence of learning. For students, the process of reconceptualizing what they know so that they can take on board new understandings may mean identifying errors and dis- banding previous ideas. In so many classrooms, the greatest reason why students do not like to expose their mistakes is because of their peers: peers can be nasty, brutal, and viral! Expert teachers create classroom climates that welcome admission of errors; they achieve this by developing a climate of trust between teacher and student, and between student and student. The climate is one in which 'learning is cool', worth engaging in, and everyone – teacher and students – is involved in the process of learning. It is a climate in which it is okay to acknowledge that the process of learning is rarely linear, requires commitment and investment of effort, and has many ups and downs in knowing, not knowing, and in building confidence that we can know. It is a climate in which error is welcomed, in which student questioning is high, in which engagement is the norm, and in which students can gain reputations as effective learners.



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Excerpted from *Visible Learning for Teachers*

C. EXPERT TEACHERS MONITOR LEARNING AND PROVIDE FEEDBACK

This ability of expert teachers to problem-solve, to be flexible, and to improvise ways in which students can master the learning intentions means that they need to be excellent seekers and users of feedback information about their teaching – that is, of feedback about the effect that they are having on learning.

A typical lesson never goes as planned. Expert teachers are skilled at monitoring the current status of student understanding and the progress of learning towards the success criteria, and they seek and provide feedback geared to the current understandings of the students (see Chapter 7 for more on the nature of this 'gearing'). Through selective information gathering and responsiveness to students, they can anticipate when the interest is waning, know who is not understanding, and develop and test hypotheses about the effect of their teaching on all of their students.

D. EXPERT TEACHERS BELIEVE THAT ALL STUDENTS CAN REACH THE SUCCESS CRITERIA

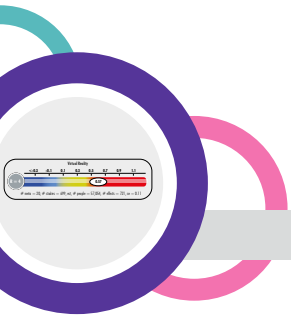
Such an expectation requires teachers to believe that intelligence is changeable rather than fixed (even if there is evidence to show it may not be – see Dweck, 2006). It requires teachers to have high respect for their students and to show a passion that all can indeed attain success. The manner used by the teacher to treat and interact with students, to respect them as learners and people, and to demonstrate care and commitment for them also needs to be transparent to students.

This notion of passion is the essence of so much, and while we may find it difficult to measure, we certainly know it when we see it:

> Passionately committed teachers are those who absolutely love what they do. They are constantly searching for more effective ways to reach their children, to master the content and methods of their craft. They feel a personal mission ... to learning as much as they can about the world, about others, about themselves – and helping others to do the same.
>
> (Zehm & Kotler, 1993: 118)

To be passionate about teaching is not only to express enthusiasm but also to enact it in a principled, values-led, intelligent way. All effective teachers have a passion for their subject, a passion for their pupils and a passionate belief that who they are and how the teacher can make a difference in their pupils' lives, both in the moment of teaching and in the days, weeks, months and even years afterwards.

(Day, 2004: 12)



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John Hattie

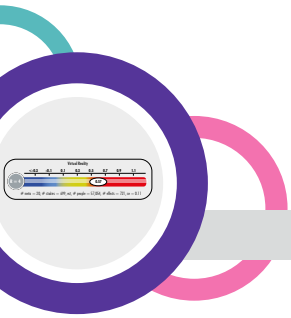
Excerpted from *Visible Learning for Teachers*

Students can see it. The Measures of Effective Teaching Project (Gates Foundation, 2010) has estimated the value-added component of 3,000 teachers and at the same time asked students of these teachers to complete surveys of their experiences in these classes. The set of seven factors (the '7 Cs') listed in Table 2.1 show dramatic differences in how students see the classes of those teachers (called 'high added-value teachers') who have added higher- than-expected achievement gains (taking into account students' prior achievement, at the 75th percentile) compared with students in classes in which the gains are much lower (at the 25th percentile). For example, teachers whose students claim that they 'really try to understand how students feel about things' are more likely to be at the 75th percentile than at the 25th in terms of the value-added learning that occurs in classes.

The picture of expert teachers, then, is one of involvement and respect for the students, of a willingness to be receptive to what the students need, of teachers who demonstrate a sense of responsibility in the learning process, and of teachers who are passionate about ensuring that their students are learning.

E. EXPERT TEACHERS INFLUENCE SURFACE AND DEEP STUDENT OUTCOMES

The fundamental quality of an expert teacher is the ability to have a positive influence on student outcomes – and, as noted in Chapter 1, such outcomes are not confined to test scores, but cover a wide range: students staying on at school and making an investment in their learning; students developing surface, deep, and conceptual understandings; students developing multiple learning strategies and a desire to master learning; students being willing to take risks and enjoying the challenge of learning; students having respect for self and others; and students developing into citizens who have challenging minds and the disposition to become active, competent, and thoughtfully critical participants in our complex world. For students to achieve these outcomes, teachers must set challenging goals, rather than 'do your best' goals, and invite students to engage in these challenges and commit to achieving the goals.



TEACHERS

THE MAJOR PLAYERS IN THE EDUCATION PROCESS

John Hattie

Excerpted from *Visible Learning for Teachers*

DIMENSIONS	EXAMPLE ITEMS	AT THE 25TH PERCENTILE	AT THE 75TH PERCENTILE
Care	My teacher in this class makes me feel that s/he really cares about me	40%	73%
	My teacher really tries to understand how students feel about things	35%	68%
Control	Students in this class treat the teacher with respect	33%	79%
	Our class stays busy and doesn't waste time	36%	69%
Clarify	My teacher has several good ways of explaining each topic that we cover in this class	53%	82%
	My teacher explains difficult things clearly	50%	79%
Challenge	In this class, we learn a lot almost every day	52%	81%
	In this class, we learn to correct our mistakes	56%	83%
Captivate	My teacher makes lessons interesting	33%	70%
	I like the ways in which we learn in this class	47%	81%
Confer	Students speak up and share their ideas about class work	40%	68%
	My teacher respects my ideas and suggestions	46%	75%
Consolidate	My teacher checks to make sure that we understand when s/he is teaching us	58%	86%
	The comments that I get on my work in this class help me to understand how to improve	46%	74%

Table 2.1 Differences in students' views of high-value and low-value teachers on seven factors of classroom climate (the '7 Cs')

How do expert teachers differ from experienced teachers in these five dimensions?

These five dimensions of expert teachers were identified from a literature review and they set the scene for a study in which we compared National Board certified teachers (NBCs) ('expert teachers') with teachers who had applied for, but did not become, NBCs ('experienced teachers'). While we sampled more than 300 teachers, the final study concentrated on those close to the 'pass' mark. We choose 65 middle childhood/generalists or early adolescence/English language arts teachers; half scored just above and half scored just below the cut-off score. For each of the five

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dimensions of expert teachers, we devised a series of student tasks, class observation schedules, interviews with the teacher and students, and surveys, and we collected artefacts of the instruction that we observed (see Smith, Baker, Hattie, & Bond, 2008, for details).There were major differences in the means of the two groups across all dimensions.

The magnitude, or importance, of the differences in these means is best demonstrated by graphing the effect size of each of the dimensions (see Figure 2.1). The more accomplished teachers set tasks that had a greater degree of challenge; they were more sensitive to context and they had a deeper understanding of the content being taught. More importantly, there was little difference between the classrooms of expert and experienced teachers in surface-level achievement outcomes, but there were major differences in the proportions of surface and deep understandings: 74 per cent of the work samples of students in the classes of NBCs were judged to reflect a deep level of understanding, compared

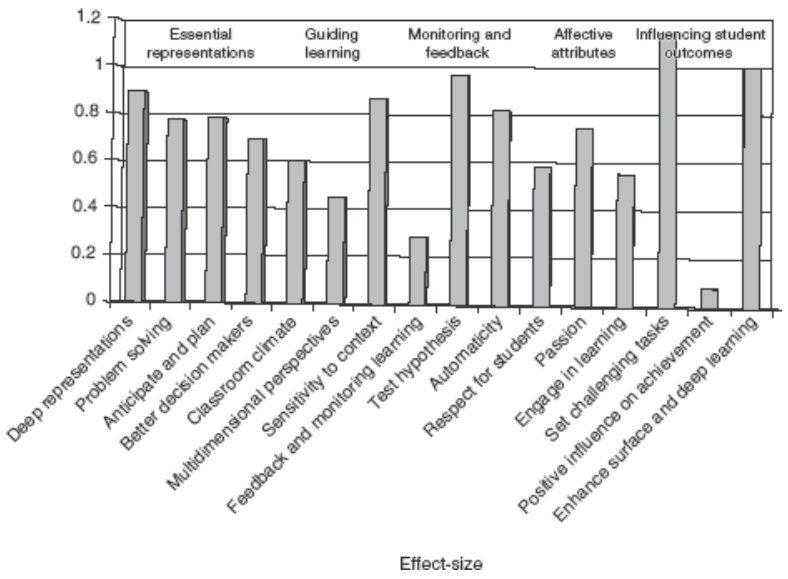

Figure 2.1 Effect sizes of differences between expert and experienced teachers

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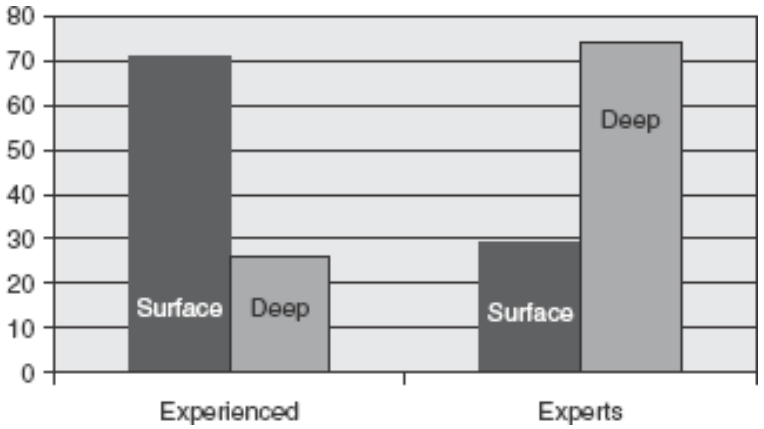
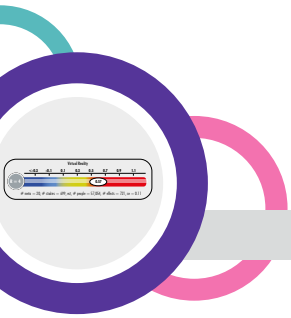


Figure 2.2 Percentage of student work classified as surface or deep learning

with 29 per cent of the work samples of non-NBC teachers (see Figure 2.2). Students of expert teachers are much more adept at deep, as well as surface, understanding, whereas experienced non-experts are as adept at surface, but not deep, learning.

Although there have been many claims of what makes an effective teacher, too few have been based on evidence from classrooms. Too often the lists have been based on simple analyses of individual parts of teaching, on small numbers of teachers, and on teachers that have not already been identified as expert based on rigorous and extensive assessment processes. The study reported above started with an extensive review of literature and a synthesis of many thousands of studies. It then led to a very detailed specification of information that was gathered in classrooms over many days. This information was then independently coded, using some exciting new developments in classroom observation methodology. The results are clear: expert teachers do differ from experienced teachers – particularly in the degree of challenge that they present to students, and, most critically, in the depth to which students learn to process information. Students who are taught by expert teachers exhibit an understanding of the concepts targeted in the instruction that is more integrated, more coherent, and at a higher level of abstraction than the under- standing achieved by students in classes taught by experienced, but not expert, teachers.



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THE INSPIRED TEACHER

VISIBLE LEARNING – CHECKLIST FOR INSPIRED AND PASSIONATE TEACHING

4. This school's professional development also aims to help teachers to seek pathways towards:

   a. solving instructional problems;

   b. interpreting events in progress;

   c. being sensitive to context;

   d. monitoring learning;

   e. testing hypotheses;

   f. demonstrating respect for all in the school;

   g. showing passion for teaching and learning; and

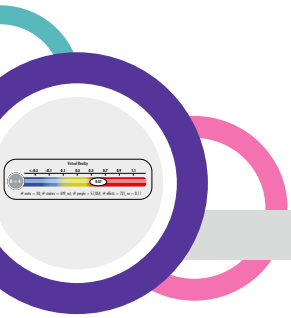
   h. helping students to understand complexity.

Steele (2009) has used our studies to develop a model of 'inspired teaching'. She made distinctions between the 'unaware',' aware', 'capable', and 'inspired' teacher; that inspiration comes both from teachers being evaluators of their own effect and from teachers taking inspiration from the students – their reactions, learning, and challenges. She traces the pathways for each of the dimensions: the path to solving instructional problems; the path to interpreting events in progress; the path of being sensitive to context; the path to monitoring learning; the path to testing hypotheses; the path to demonstrating respect; the path to showing passion for teaching and learning; and the path to helping students to under- stand complexity.

Take, for example, showing passion for teaching and learning. Steele notes that passion is not mysterious: it relates to the level of enthusiasm that the teacher shows, the extent of commitment to each student, to learning, and to teaching itself, and it can be seen when listening to teachers talking about student learning.

These teachers are firmly convinced that they are responsible for student learning and consistently bend their efforts toward doing a better job every day.

(Steele, 2009: 185)



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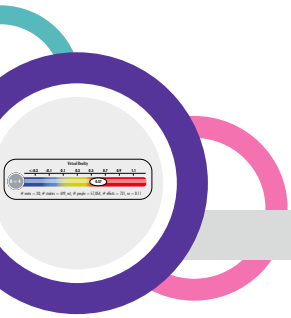
These teachers see better ways in which to teach their students; they believe that how they talk about the specific topic and the ways in which they lead students to experience it can make each lesson more engaging; and they believe that they are personally responsible for student learning. Most of us recall our favourite teachers because they cared deeply that we shared their passion and interest in their subject, they seemed to take extra effort to make sure that we understood, they tolerated and learned from our mistakes, and they celebrated when we attained the success criteria. These passionate teachers had the same time, same curriculum, same exam constraints, same physical settings, and the same class sizes as other teachers, but they certainly communicated the excitement of the challenge, and their commitment and caring for learning.

Steele notes that nearly all enter the teaching profession with a sense of idealism and purpose. As we confront the realities and challenges of schools and classrooms, we can then choose four roads: quit (as do about 50 per cent within the first five years); become dis- connected and simply perform the role of teaching; work to become competent and seek promotion out of the classroom; or learn to experience the joy of inspired teaching. The difference between the inspired teacher and the capable teacher is large. I do acknowledge that some commentators prefer to talk about inspired teaching (rather than teachers), arguing that individual teachers can be inspired on some days, but not necessarily on all days – and maybe not for all students all of the time. This is indeed the case. We know, for example, that Roger Federer is not a brilliant tennis player with every shot – but this should not mean that we can speak only of inspired tennis playing, and not of inspired tennis players.

Federer is inspiring and most of us would claim that he is an expert tennis player. Similarly, inspired teachers do not always have inspired teaching, but overall the probabilities are such that we can talk about inspired teachers. Yes, in my own tennis playing, I too can play an occasional shot like Roger Federer and, in these moments, could be considered an inspired player (at least in my own mind), but overall I am not an expert tennis player.

There are certainly many things that inspired teachers do not do: they do not use grading as punishment; they do not conflate behavioural and academic performance; they do not elevate quiet compliance over academic work; they do not excessively use worksheets; they do not have low expectations and keep defending low-quality learning as 'doing your best'; they do not evaluate their impact by compliance, covering the curriculum, or conceiving explanations as to why they have little or no



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impact on their students; and they do not prefer perfection in homework over risk-taking that involves mistakes.

We can have high expectations of teachers and schools to have major impacts on students' growth in learning. We expect this of our sports coaches – not to win all of the time, but to teach and improve the quality of each player's skills, to play the game in the spirit of the rules, to develop individual as well as team work, to value commitment and loyalty to improvement, and to be fair to all players about the dual success criteria of most child sport (participation and aim to win). Our expectations of those in our schools need be no different.

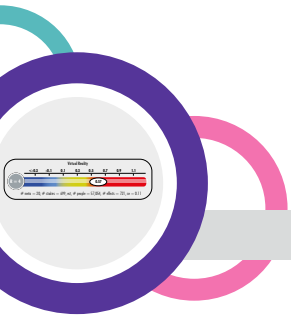
The major theme underlying the five dimensions of expert teachers discussed in this chapter is that they are about the impact that teachers have – and not about teachers' personal or personality attributes (Kennedy, 2010). If only teacher education programs were more concerned about how budding teachers can know about the effect that they have, and less about knowing who they are and how to go about teaching, then we may get a better outcome. The ultimate requirement is for teachers to develop the skill of evaluating the effect that they have on their students. It is not so much a concern, for example, that beginning teachers know about diversity; it is more a concern that they know about the effects that they have on the diverse student cohort that they are likely to be teaching. They need to be able to react to the situation, the particular students, and the moment. Teachers work in remarkably varied situations, have interactions with many different students, and work in schools with much variance in conditions (planning times, interruptions, collaborative opportunities). To expect sustained effect on a regular basis is too big an ask – but the ask in this book is that teachers constantly attend to the nature and quality of the effect that they are having on every student.

CONCLUSIONS

VISIBLE LEARNING – CHECKLIST FOR INSPIRED AND PASSIONATE TEACHING

5. Professionalism in this school is achieved by teachers and school leaders working collaboratively to achieve 'visible learning inside'.

There is so often a rush to solve the problem of 'the teachers', but this is a mistaken direction. The messages in this book should not take us into the territory of



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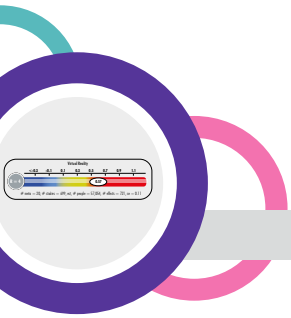
measuring teachers, paying better teachers more, changing the training, and fixing entry into the profession – albeit that these are important and fascinating questions. Instead, the message of this book is to enable each teacher to better understand his or her effect on his or her students, and to assist teachers to develop a mind frame of evaluation to help them to move into the group of highly effective teachers (that is, those who regularly have impacts d ← 0.40) that we all should be inspired to join.

This is how a profession works: it aims to help to identify the goal posts of excellence (and they are rarely simple, uni-dimensional, and assessed by a test alone, as the outcomes of education outlined above should clearly show); it aims to encourage collaboration with all in the profession to drive the profession upwards; and it aims to esteem those who show the competence. Too often, we see the essential nature of our profession as autonomy – autonomy to teach how we know best, autonomy to choose resources and methods that we think are best, and autonomy to go back tomorrow and have another chance of doing what we have already done many times. As I noted in *Visible Learning*, we have good evidence that most, if not all, of our methods, resources, and teaching do have a positive effect on achievement – and many attain greater-than-average effects. The profession needs to be embracing the notions of what it is to be successful in teaching, helping all in a collaborative manner to attain this excellence, and recognizing major effects when they are evident. We have no right, however, to regularly teach in a way that leads to students gaining less than d = 0.40 within a year.

Clearly, this approach of evaluating the effects of teaching places more emphasis on student learning; often, we have been much more concerned with teaching rather than learning. At best, for some, learning occurs if the students complete the task, show interest and engagement, and 'pass' tests. Moving towards understanding learning, however, means starting with the private world of each student and the semi-private world of peer interactions, as well as the more public teacher-managed effect on students. Nuthall (2007) noted that 25 per cent of the specific concepts and principles that students learn are critically dependent on private peer talk or the choice of resources with which students can engage. The key is what is going on in each student's mind – because influencing these minds is the point of the lesson!

When students are interviewed as to what they want from teachers, the same theme of understanding their learning comes through. McIntyre, Pedder, and Rudduck (2005) summarized an extensive series of research on student voice and concluded that students want a constructive focus on learning. Students do not digress to



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complaining about perceived injustices, or describing personal teacher characteristics; they wanted to talk about their learning and how to improve. As Chapter 7 will show, our studies underline the importance that students place on 'moving forward'. The students preferred concise explanations, recognition that students can learn at different rates, tasks that connected new with the familiar, and a greater independence and autonomy in their classroom learning than that to which they were often accustomed. As McIntyre et al. noted, it is as easy as it is legitimate for teachers to claim that students' suggestions rarely take adequate account of the complexity of the teacher's task, but it is only those teachers who have the mind frame that students' perceptions are important who make the sustained efforts needed to engage students more in learning.

EXERCISES

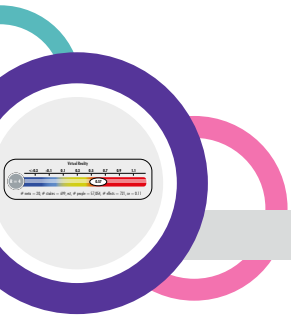
1. Using a six-point Likert scale (from 'Strongly disagree' to 'Strongly agree') administer the '7 Cs' measure of effective progress' discussed above. Use the results as the basis for a discussion about how you could change what you do as a teacher to have more students rate all of the items either '5' or '6'.

2. Consider forms of evidence from the NBPTS (http://www.nbpts.org) about teacher quality. Discuss how you might use this evidence to enhance your teaching, or collect the evidence and then discuss with colleagues how you might modify your teaching to increase your impact on all students

3. Invite all teachers to write a description of 'yourself as a teacher'. Pool all responses (with no names) and then meet to decide if this description is consistent with the inspired and passionate teacher.

4. Monitor the topics of debate in staff meetings, coffee sessions, and professional development meetings, then classify them according to domains of discussion (for example, structural, teaching, curricular, assessment, student). If they are not about the impact of our teaching, discuss what would be required in this school to shift the debates to the impact of teaching on students – and then engage in those debates.

5. Ask your teachers (or student teachers) to interview students (preferably students from another teacher's class to reduce bias and perceived pressure), asking: 'What does it mean to be a "good learner" in this classroom?' Share the interview results (minus student names) with your fellow teachers.



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6. With other teachers, learn how to use the SOLO surface and deep categories (see Hattie & Brown, 2004) to develop learning intentions, success criteria, questions for assignments, and teacher and student in-class questions, and to provide feedback on student work. Ensure that there are high levels of agreement across teachers as to which categories are surface and which are deep.

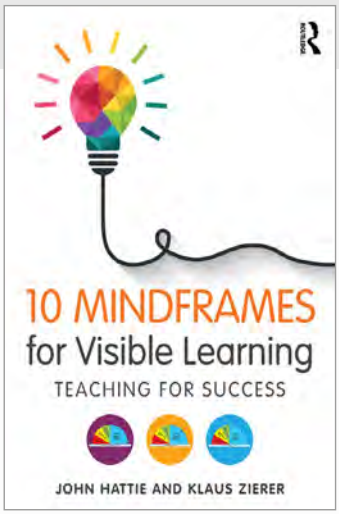
7. Ask each teacher to think about the last time that they showed passion in their teaching. Ask students the same question (about their teachers). Compare these examples of passionate teaching.

CHAPTER

3

I AM AN EVALUATOR OF MY IMPACT ON STUDENT LEARNING

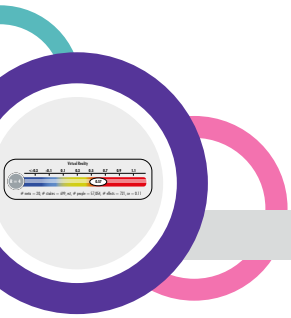
QUESTIONNAIRE FOR SELF-REFLECTION



This chapter is excerpted from

10 Mindframes for Visible Learning: Teaching for Success

By John Hattie and Klaus Zierer



I AM AN EVALUATOR OF MY IMPACT ON STUDENT LEARNING

QUESTIONNAIRE FOR SELF-REFLECTION

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Excerpted from *10 Mindframes for Visible Learning: Teaching for Success*

Assess yourself by rating your agreement with the following statements:
1 = strongly disagree, 5 = strongly agree.

I am very good at . . .

making my impact on student learning visible.

using methods for making my impact on student learning visible.

I know perfectly well . . .

that student achievements make my impact visible.

that student achievements help me to maximize my impact.

My goal is always to . . .

evaluate my impact on student learning.

use multiple methods of measuring student achievement to assess my impact on student learning.

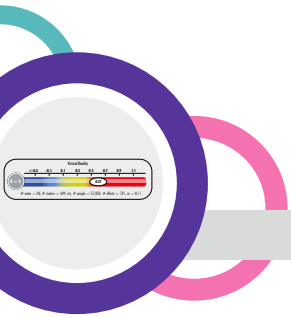
I am thoroughly convinced . . .

that I need to evaluate my impact on student learning regularly and systematically.

that I need to use student learning to asses my impact.

VIGNETTE

Please imagine two teachers. Both prepare their lessons properly and conscientiously. While the one teacher formulates his or her central message as "I want to teach a good lesson," the maxim of the other teacher is "I would like to make my impact on the learners visible at the end of the lesson." Both mindframes are convincing at first glance. At second glance, however, the difference becomes clear: The first teacher will be satisfied if she or he feels at the end of the lesson that the lesson has gone well, the learners have participated well, no disturbances have interrupted the flow of the lesson, and the most important content was explained. All of this is, of course, important for the other teacher as well. But she or he will not rely on feeling and will look for evidence. As a result, at least at the end of the lesson, but probably during the lesson as well, the second teacher will have to slip into the role of the



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evaluator again and again, listening instead of talking, making learning visible and showing the students what they can do now – and what they cannot. The lesson will not end without this teacher trying to make his or her influence visible by means of the students' learning performance.

WHAT IS THIS CHAPTER ABOUT?

This vignette tries to pinpoint the core message of this mindframe: Educational expertise is shown by how teachers think about what they do. One of the most crucial questions is whether teachers want to know about their impact and make it visible. Teachers who have set themselves this goal and are consistently trying to implement it are fundamentally different from teachers who do not ask themselves this question. "Visible Learning" and "Know thy impact" become the core message of this mindframe – and the core message of this book.

After reading this chapter, you should be able to explain, in light of this core message:

- the progress from proficiency to enhanced achievement.
- the evidence of the factors "providing formative evaluation" and "response to intervention."
- what is meant by the notion "Teachers are to DIE for."
- how individual feedback works.

WHICH FACTORS FROM VISIBLE LEARNING SUPPORT THIS MINDFRAME?

When you walk into a classroom and say to yourself, "My job here is to evaluate my impact," then students are the major beneficiaries. This is by far the most important of all mindframes and dominates as the major message from the Visible Learning research. Of course, this begs the moral purpose question of what we mean by impact. It also means we have to continually adjust and refine what we are doing to maximize the impact for each student, and it means we often need to stop talking and listen for our impact.

There are many forms of impact, such as a sense of belonging as a learner, the will and thrill of learning, respect for self and respect for others, higher achievement and attitudes, positive disposition, and social sensitivity. There are many ways to make

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this impact visible: artefacts of student work, observation of students' learning, tests and assignments, listening to interactions among students, and privileging student voice about their learning.

We must ensure each student progresses in his or her achievement journey across the usual school disciplines. While, of course, the topics of these disciplines can be quite different depending on country or even jurisdiction, some form of academic achievement is present in every classroom. It is not the task of this book to debate this curriculum but to be reminded of Michael Young's (2013) claim that we often send students to school to be exposed to what they would not be exposed to if they did not go. Also, to note that most curricula are based on "adult group think": groups of adults deciding on scope and sequence of topics. Rarely is curriculum based on how students actually progress (because there is so little research on that topic). Indeed, if we lined up various curricula from different jurisdictions, it is for certain that they would differ in this scope and sequence and the choice of curricula topics – but each would be presented as the one and proper solution.

Whatever the content, the progress is the critical task we ask of teachers and students. Developing an understanding of progression can either be explicit and provided to teachers or it can be intuitive and worked through by teachers in the moment within the classroom. Given the many students in a class, the latter is more frequent, simply because learning is rarely linear and follows someone's dictates of how learning progresses – it is more staccato, and it is likely that progression can differ depending on where each student starts.

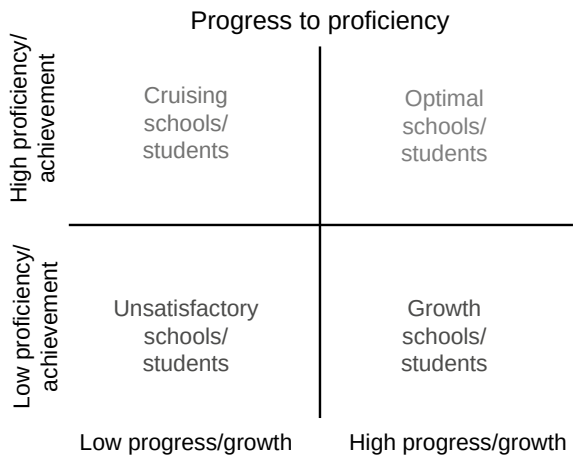

Figure 3.1 Progress to proficiency

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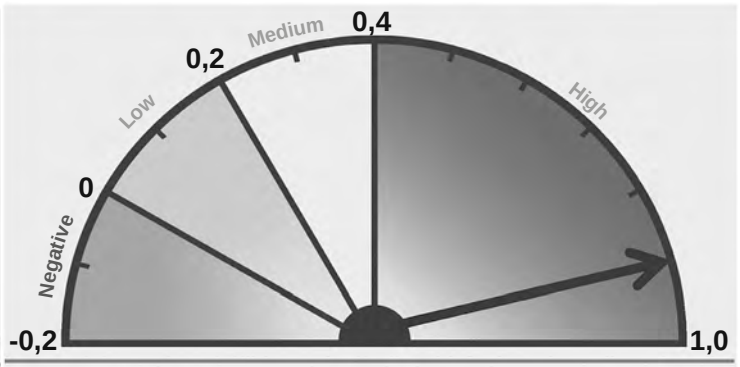
Note the emphasis on progression to achievement. Too often, high achievement is privileged and although, of course, we all want high achievement, an overemphasis on achievement can lead to distortions in understanding the impact of educators. The relation between progress and achievement can be expressed in many ways, such as in Figure 3.1. On the x-axis we have placed growth or progress and on the y-axis, achievement. We can apply tentative labels to each of the four quadrants. Success is thus not always high achievement (who wants to be a cruising school or student) but is defined as high progress. No matter where the student starts, he or she deserves at least a year's growth for a year's input. And knowing that this is the focus of impact is the fundamental starting point of understanding impact.

To understand what a "year's growth" means, we have to consult multiple sources. It can include looking at effect sizes over time, examples of student work over a year, indexing to a year's curriculum claims – but critically understanding this growth involves conferring with other teachers. This is related to the mindframe "I collaborate with my peers and my students about my conceptions of progress and my impact."

PROVIDING FORMATIVE EVALUATION

In Figure 3.2, the factor "providing formative evaluation" arouses interest, as it is among the most powerful factors in Visible Learning, with an effect size of 0.90.

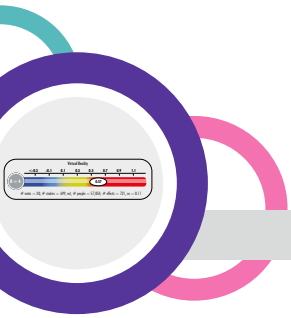


Providing formative evaluation

Rank	Number of meta-analyses	Year of publication
4	2	1986–2002

d = 0,90

Figure 3.2 Providing formative evaluation



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What does formative evaluation involve, and what makes it so effective? Michael Scriven (1967) distinguishes between formative and summative evaluation of instructional processes. Whereas formative evaluation is conducted during an intervention, allowing the teacher to use the resulting data to improve the instructional process, summative evaluation is conducted at the end of the intervention and is thus an evaluation of its result. (Note that this means that there is no such notion as formative or summative assessment, as any assessment can be used to make formative evaluation [during the lesson] or summative evaluation [at the end of the lesson]. The effects on student learning will obviously be different in each case: Results from a formative evaluation can still be used to benefit the learners, whereas results from a summative evaluation serve only as feedback for the teacher – although it can be used later by learners in the next set of lessons. These characteristics show why formative evaluation is often seen as being closely related to feedback, and indeed there are many aspects in which they overlap. However, there are two important, if not to say crucial, distinctions between these factors. First, while feedback can take the form of teacher-to-student feedback or student-to-teacher feedback, formative evaluation provides feedback from the learner to the teacher: It helps the teacher modify instruction, see the effects of their teaching so far, and hints as to where to go next in their teaching. Second, while feedback focuses on all aspects of teaching, formative evaluation focuses on the goals of the learning process and seeks to determine whether the learners have reached these goals – yet. The secret to the success of a formative evaluation lies in these two distinctions. After all, it is focusing on whether learners have reached the goals or success criteria of the lessons – and it is the teacher who needs to have the competence and mindframe to seek this information and draw the right conclusions from it for the further course of the learning process. Of course, students can also use formative evaluation to tweak, change, and modify their own learning, but it is formative evaluation about and to the teacher that has the greatest impact.

RESPONSE TO INTERVENTION

The term "response to intervention," "RTI" for short, originated in the United States, and refers to an approach designed especially for children and youths with learning difficulties (see Figure 3.3). It thus has its roots in special education but has since been applied to general education within the context of inclusion – with as much success. The secret to the success of the "response to intervention" factor lies in the teacher's continuous adjustment of the lesson (intervention) and the resulting benefit

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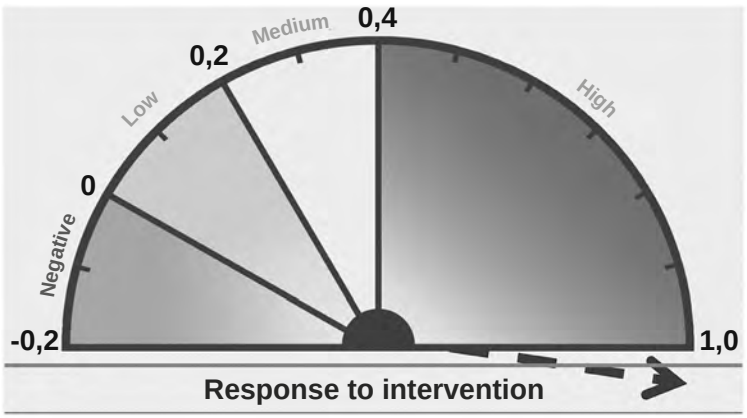
derived from the learners (response). It enables the teacher to continually adjust the instruction to match the current learning level of the students.

This process is organized in a so-called multilevel prevention model generally made up of three tiers: At the first tier, the teacher holds a regular lesson for all learners that meets current quality criteria. At the second tier, the teacher intervenes on behalf of the learners who were incapable of achieving the desired learning success in the first step. This support involves applying appropriate methods for measuring learning levels and is given in small groups for a set period of time. At the third tier, the teacher provides supplementary instruction for learners who did not achieve the desired learning success during the intervention on the second tier.

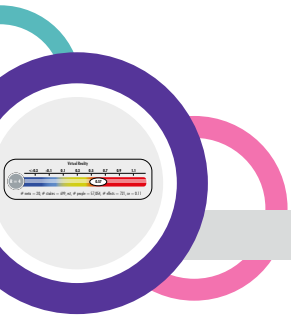
At this third tier, interventions generally take the form of one-on-one instruction, allowing the teacher to provide more individualized and intense support to the students who need it. Hence, the three tiers differ in regard to group size, degree of individualization, and duration. It is important to remark that the teacher needs to demand continuous feedback on learning success between all the tiers and during all the interventions in order to provide the learners the best possible support.



Rank	Number of meta-analyses	Year of publication
3	1	2011

d = 1,07

Figure 3.3 Response to intervention



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TEACHERS ARE TO DIE FOR

This is akin to the notions within RTI, with the emphasis on excellent diagnosis, appropriate interventions, and excellent evaluation of the interventions. Too often, there is an overemphasis on the teaching or interventions, even when adoption of these interventions is not related to what students already know or do not know, and too often, the same intervention or teaching method is reproduced and students are blamed for not attending, not being motivated, or not being smart. Instead, if students do not learn the first time, a change in the method of teaching is more likely to move these students forward.

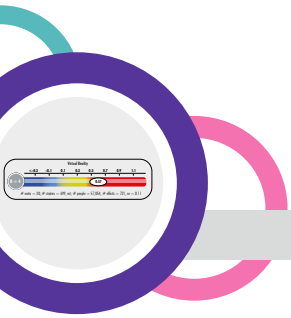
These three aspects certainly highlight the expertise needed by teachers, and there is a continuing interplay between them. Such a philosophy demands higher level cognitive decision skills by teachers; demands the willingness to say "I was wrong in my choice of method of intervention" and need to change what I do or to say "I was right in my choice of interventions," as they led to me successfully teaching these students; and demands teachers engaging in collaborative inquiry about their diagnoses, interventions, and evaluations. Rushing to interventions, trying some new method, or adopting a new teaching approach without attending to the needs of the students is common and can be destructive. If the new approach does not work, it is often the case that teachers say the students were not receptive, were from the wrong postcode, or did not commit to the work. Beware of educators with solutions – if these solutions do not remediate the needs of the students.

Diagnosis – that is, understanding what each student brings to the lesson, his or her motivations, and willingness to engage.

Intervention – that is, having multiple interventions such that if one does not work with the student, the teacher changes to another intervention. It also involves knowing the high probability interventions, knowing when to switch, and certainly not creating blame language about why the student is not learning.

Evaluation – that is, knowing the skills, having multiple methods, and collaboratively debating the magnitude of impact from the interventions.

These three parts of maximizing impact may need a fourth – quality implementation. A great intervention poorly implemented is more a reflection of the implementation than the intervention. This is why we need care when we see that certain teaching interventions have high effect sizes – these are probability statements about the likelihood of an intervention. Care is still needed to ensure fidelity of implementation. So perhaps it should be Teachers are to DIIE for!



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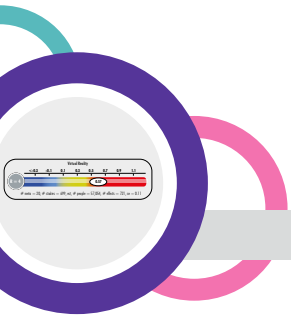
WHERE CAN I START?

These considerations lead us to an idea advanced in *Visible Learning for Teachers* (Hattie, 2014): It is possible with the help of regular tests to calculate an individual effect size for each learner. This involves taking the formulas described in the preface of this book and entering the test results into a table. After calculating the mean values, the standard deviations, and the mean value of the standard deviations, one can create the following table with individual effect sizes.

STUDENT	TIME	TIME 2	GROWTH ES
Julia	44	48	0.28
Julio	57	66	0.62
Kate	37	52	1.03
Megan	82	78	-0.28
Jennifer	39	62	1.58
Matt	46	64	1.24
Yun	57	73	1.10
Pablo	63	60	-0.21
Robert	68	71	0.21
Max	29	35	0.41
Rodriguez	67	68	0.07
Average	**53.55**	**61.55**	
SD		**14.54**	
Effect size		**0.55**	

Table 3.1 Effect size

To calculate effect sizes for individual students, we assume that each student contributes similarly to the overall variance (and given we are making an assumption, we need extra care in interpretation; check any surprises with alternative evidence) and then use the pooled spread (standard deviation) as an estimator for each student. We use the following formula:



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$$\textbf{Effect size} = \frac{\text{Mean}_{\text{end of treatment}} - \text{Mean}_{\text{beginning of treatment}}}{\text{Standard Deviation}}$$

In the previous case, there are now some important questions for teachers. Why did Jennifer and Matt achieve such high gains, and why did Megan, Robert, and Julia achieve such low gains? The data, obviously, do not ascribe the reasons, but they do provide the best evidence to lead to these important causal explanations. (Note that, in this case, it is not necessarily a fact that it was the struggling students who made the lowest and the brightest who made the highest gains.)

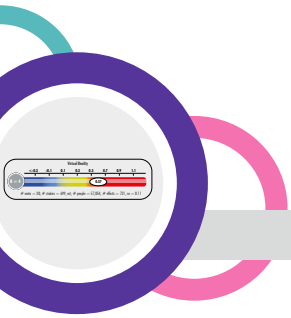
Given that there is an assumption (that each student contributes to the spread similarly), the most important issue is the questions that these data create: What possible explanations could there be for those students who achieved higher impacts and for those who achieved lower impacts? This then allows evidence to be used to formulate the right questions. Only teachers can look for the reasons, and as always, we need to look for triangulation about these reasons and devise strategies for these students.

There are some things of which you should be aware when using effect sizes:

A. Caution should be used with small sample sizes: The smaller the sample, the more care should be taken to cross-validate the findings. Any sample size of fewer than 30 students can be considered "small" and thus care is nearly always needed.

B. It is crucial to look for outlier students. In a small sample, a few outliers can skew the effect sizes, and they may need special consideration (with questions including Why did they grow so much more than the other students? or Why did they not grow as much as the other students?); the effect sizes may even need to be recalculated with these students omitted. If the overall effect does not change much when outliers are included compared with excluded, then it is probably reasonable to leave them in. If quite different, they must be omitted from the calculations.

The advantage of using the effect-size method is that effect sizes can be interpreted across tests, classes, times, and so forth. Although it makes much sense to use the same test for the pre- and post-test, this is not always necessary. For example, in some longitudinal tests, the tests are different each time, but they have been built to



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measure the same dimension both times and calibrated to take into account different difficulties of the items in the tests. There are some forms of scores that are less amenable to interpreting; for example, percentiles, stanines, and NCE scores have sufficiently unusual properties that effect sizes as calculated earlier can yield misleading results.

Using effect sizes invites teachers to think about using assessment to help to estimate progress and to reframe instruction to better tailor learning for individuals or groups of students. It asks teachers to consider reasons why some students have progressed and others have not – as a consequence of their teaching. This is an example of "evidence into action."

CHECKLIST

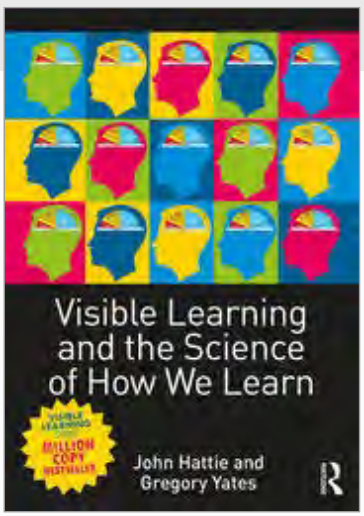
- Make your impact on student learning visible at the end of the lesson.
- Use this information to plan the next lesson.
- Implement in the intervention phase procedures to measure your impact on student achievement and to make learning visible in order to be able to deal with this in the intervention phase.
- Use formative evaluation to make learning visible.

EXERCISES

- Return to the self-reflection questionnaire at the beginning of the chapter and fill it in with a different color. Where has your view of things changed and, above all, why? Discuss your assessments with a colleague.
- Plan your next lesson including a phase in which students have to show what they have learned. Discuss your experiences with your colleagues.
- Design with your colleagues two tests for individual feedback and pro-vide this formative assessment in class. Discuss your experiences with your colleagues and develop this tool on an evidence-based basis.

CHAPTER

4 THE ROLE OF FEEDBACK



This chapter is excerpted from

Visible Learning and the Science of How We Learn

By John Hattie and Gregory C.R Yates

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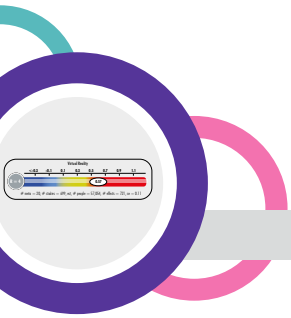

THE ROLE OF FEEDBACK

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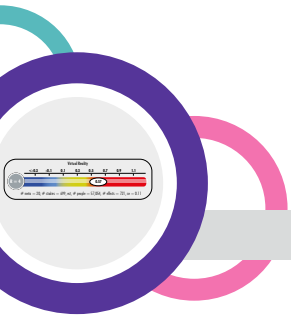
Imagine arriving in an unfamiliar foreign city and needing to check into your hotel. Deprived of GPS, you ask a local person on the street. Despite your bad pronunciation, this person recognises the name of the hotel and proceeds to inform you of its history, of its terrible cuisine, and tells you not to go there. But still, you plead, 'How do I find it?' The local then says to consult a street map, and tells you that his brother runs a course on navigation and direction finding. You tell him that you are not wanting to do any such course, so he asks just what sort of course are you interested in. We have a communication breakdown.

The above paragraph was intended to be humorous. But something remarkably close to this form of communication breakdown surfaces when we contrast what teachers tell us about what feedback means to them with what students say they want. When we survey teachers, the following dimensions, the ten Cs, emerge. In the teachers' view, feedback consists of:

- comments, and more instructions about how to proceed
- clarification
- criticism
- confirmation
- content development
- constructive reflection
- correction (focus on pros and cons)
- cons and pros of the work
- commentary (especially on an overall evaluation)
- criterion relative to a standard.

Teachers claim to give students high levels of feedback on their work, but students say that this is not what they experience. When we interview students on what they understand by feedback and why it is important to them, one theme emerges almost universally: *they want to know how to improve their work so that they can do better next time*. Students tend to be future-focussed, rather than dwelling on what they have done beforehand and left behind. They are aware that past products are imperfect specimens but want to move on, and are willing to learn more new stuff provided their teachers play the same game. They will continue to exert effort provided the past efforts are treated with some respect. What they do not welcome is critique, which they find unnecessary, lengthy, personal, and hurtful. Of course they expect



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mistakes and want mistakes corrected. But they are sensitive to the climate under which criticism is given. Often, what a teacher intends as helpful critical feedback turns to personal ego evaluation in the eyes of the receiver.

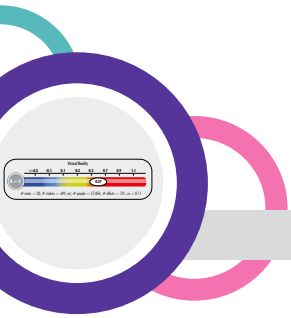
The dilemma is that students want and need information on 'where to next', but teachers often act as though that is achieved through negative feedback. Student work must be corrected, and mistakes therein can be manifest, numerous, and highly visible. But negative feedback can be problematic. Students may feel the tasks set were unreasonable. They may believe they were taught poorly, or were expected to go beyond what had been taught. They may believe that the level of effort they put in was substantial, but has gone by unrecognised.

They may feel the standard expected of them is being applied unfairly, or is differentially applied across class members. They may believe that they did a little better than their mate and that this is enough. Within the classroom, **social comparison** is rife. After all, just who is to say what is a 'good essay', and what is a 'poor essay'. Furthermore, 'we all know some teachers are unfair' is a familiar mantra. At times we have found students ignore a teacher's copious comments on written work, which they find irrelevant to their moving forward.

Besides this natural empathy gap, another hidden factor in receiving criticism concerns its volume. The principle 'bad is stronger than good' means that we mentally balance one bad event against perhaps four or five good ones. If the ratio of good to bad events drops under three we can expect trouble. Yet, when we critique our students' work, the number of negative comments can easily exceed the number of positive statements. We are not suggesting that students need a continual supply of positive affirmations (which produces its own problems), only that they will remain sensitive to the balance between positive and negative events in their lives.

MATCHING FEEDBACK TO KNOWLEDGE LEVEL

We have also noted that some instructors appear to administer feedback and marking procedures in a mechanical way, in the belief that all students are somehow 'the same'. However, it is apparent that learners need different types of feedback depending on their current skill level. Beginners need feedback based on content knowledge as they are striving to build basic knowledge and vocabulary. Hence, they need assurance and corrective feedback, often in the form of decisions such as correct versus incorrect, or right versus wrong. Intermediate learners have acquired basic concepts but need help linking ideas together, seeing relationships, and



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extending the basic ideas. They need assurance that they are applying the right methods and strategies or suggestions for alternative strategies (for instance, 'strong use of adjectives', 'good use of the acceleration principle', or 'a well-constructed argument, but have you thought of what this implies for the future?').

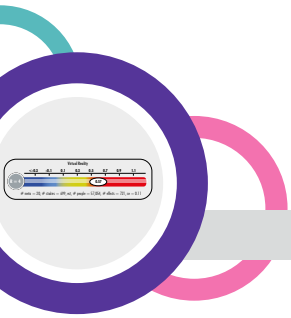
At more advanced levels, helpful feedback takes the form of supporting the self-regulated or more conceptual learner such that sincere efforts to extend and apply knowledge even further are actively recognised. In short, different types of feedback work best depending on the individual's phase of learning – corrective feedback is suited for novices, process feedback is needed as the learner becomes proficient, and elaborated conceptual feedback becomes effective with highly competent students.

MAKING THE FEEDBACK PROCESS MORE EFFECTIVE

The vital role that feedback plays in assisting learners to improve their performances has been recognised from the beginnings of behavioural science, some 150 years ago. In the VL synthesis, feedback was associated with an effect size of 0.73 indicating it is one of the most powerful factors implicated in academic learning and resultant achievement. The not so good news is that the variability of the effectiveness of feedback is huge – certain types of feedback are more effective than others – so we need to be able to specify the forms it should take and when it is associated with strong learning gains, and when it is not.

Receiving feedback enables the learner to close a critical gap, specifically the gap between current status and a more desirable level of achievement. Feedback is not the same thing as reward or reinforcement, which are terms that refer to motivational factors. Instead, feedback refers to the process of securing information enabling change through adjustment or calibration of efforts in order to bring a person closer to a well-defined goal.

In short, receiving appropriate feedback is incredibly empowering. Why? Because it enables the individual to move forwards, to plot, plan, adjust, rethink, and thus exercise self-regulation in realistic and balanced ways. This mental processing view of feedback brings with it an important caveat. *Feedback works because the goal is known and accurately defined through realistic assessment*. This is why assessments become vital in all forms of teaching and formal instruction. Students see assignments and assessments as what the teacher actually values. The sooner the outcomes are known and articulated through objective measures or assignments, the more the student can focus on achieving them.



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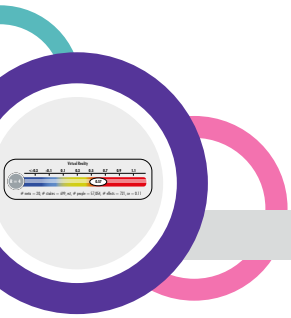
Assessment information is powerful if teachers and students have clear notions of what success looks like while they are engaged in the activity that leads to the assessment. Clarifying the criteria of success is not merely saying 'You must get at least a B', but showing students worked examples at various levels of success. Or in this case, going a step further, showing students worked examples of an A and a B and a discussion of how they are different.

Imagine a group of students who are about to embark on a series of lessons, and during these early experiences we pause and show them the various ways they will be successful at the end of the lessons, or tell them how they will know when they have been successful in these lessons. Now compare this with a similar class that is not told about what success looks like. The differences can be huge, and the VL synthesis has shown large effect-size differences between these two scenarios. Also, this is a relatively cheap investment, takes little time but of course it provides teachers with a challenge – that of working alongside the students to maximise the number who reach the success criteria.

The task now is to move the students from their current status to achieve these criteria of success. The purpose of feedback is to reduce the gap between current and desired states of knowing. Strangely enough, the principles are explicitly exposed in video games. These games map and monitor your current performance (where you finished the game last time), provide a challenge sufficiently above where you are now (like Goldilocks, not too hard but not too easy), and then pile in the feedback to allow you to reach the next level of success. Many of us will spend hours engaging with these games as we love the challenges involved. Imagine if there was no feedback, or no calibration of challenge – would we continue to engage in these games? Imagine if the challenge was too hard or too often too easy – would we continue to engage in these games?

For many students, classrooms can be akin to video games without the feedback, without knowing what success looks like, or knowing when you attain success in the key tasks. Further, the goals faced are either too hard or too easy. Lack of engagement is an understandable reaction. Feedback is powerful if students know (a) what success looks like, (b) appreciate it is aimed at reducing the gap between where they are and where they need to be, and (c) when it is focused on providing them information about where to next.



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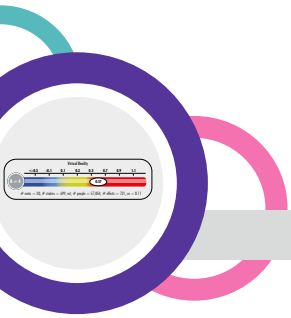
TO PRAISE OR NOT TO PRAISE

Within educational circles, there has been much misinformation about the psychology of praise. To some extent this notion was mixed up with Skinnerian psychology, behavioural modification, and the notion (which is incorrect) that praise has more powerful effects than punishment. But the notion was also mixed up with the self-esteem movement. Two readily identified fallacies are that (a) people learn more when they receive praise, and (b) people need continual praise to establish and maintain feelings of self-worth. Despite thousands of projects, neither statement has any serious support. Praise makes people happier, sometimes, and in some places. It can steer you toward wanting to do certain things, or induce you to stay in the field. But it does not assist you to learn.

We know of no research finding suggesting that receiving praise itself can assist a person to learn or to increase their knowledge and understanding. Research into the classroom use of praise by teachers was reviewed by noted researcher Jere Brophy, who found that praise often is used for interpersonal reasons, or as a management strategy. But the research found that praise did not serve as viable facilitator in academic classroom learning.

Praise has been used in clinical situations, for instance in treating some types of slow learners in carefully controlled situations. One effective clinical procedure is called shaping, where small gains are encouraged through carefully timed praise. But when it comes to the general classroom, it is apparent that praise is not a strong source of reinforcement. When you praise a student in class, that class is learning that you praise a good deal, and that is what is being taught at the moment.

Praise is generally seen as a public show involving explicit terms such as 'good boy' or 'you are so clever'. We have witnessed parents and teachers attempt to operate on the principle that they have to issue praise every time the child or student does something of which they approve. Any such continuous praise violates one of the well-entrenched cannons of behavioural psychology: that intermittent and unpredictable reinforcement produces strong and persistent habits, whereas constant and predictable reinforcement leads you to stop efforts once reinforcement is no longer present. Seriously, if we want to produce people who lack persistence and self-control, who are accustomed to immediate gratification as their default position, then rewarding them on every single opportunity is one known technique.



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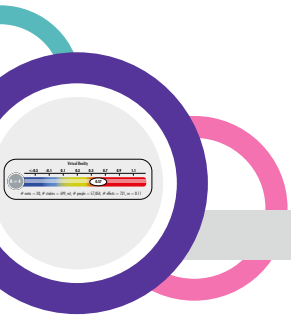
Instead, when dealing with other people in teaching contexts, it is more responsible to increase informational feedback while going lean on praise. Students need clear indications that the worthwhile target they are harbouring is becoming real. But they do not want to waste energy being worried about their standing on your approval index. The important thing is to set a positive and friendly climate – one of mutual respect and trust. But being praised repeatedly and excessively is a recipe for suspicions such as 'What is wrong with me that teacher needs to praise me all the time?', or 'If I scratch myself, maybe she will praise that too. Big deal', or 'Why aren't you giving me honest feedback?'

WHEN PRAISE DISCOURAGES EFFORT

Another fascinating aspect to the story of praise surfaced through the work of Carol Dweck. In several experimental studies she found young children's persistence in problem solving can be reduced after being praised for being clever on earlier easier tasks. Receiving praise for being intelligent or clever has an unfortunate consequence of drawing attention to ability as a limited resource. If you then have to face a more difficult task, your ability is back on the line: quite simply, you may not have enough of it. Praising a student for possessing native ability on easier tasks may have a destructive effect on striving when the going really does get tough.

The bind is that whenever the task in front of you is seriously hard, it is important not to start thinking about your ability. It is important to keep the mind open on this score. The mental focus has to be placed upon the task rather than the ego. However, praising someone for their ability can shift the attribution process the wrong direction, paradoxically raising self-doubt.

Learners need to expect difficult tasks to be difficult. But harm is done when experiencing difficulty is wrongly interpreted. Believing one has to be successful all the time can create self-doubt leading to reduced coping efforts. A recent French study with 11-year-olds showed that the effect of failure on a difficult problem-solving task could be offset through students being helped to understand that experiencing difficulty is a perfectly normal and expected part of the learning process. Students who heard this explicit message from the experimenter performed better on tests of comprehension and memory than those who did not hear this message. These students, the ones who experienced failure they could explain, performed more strongly on the tests than other students who had succeeded on the earlier tasks when they had been set at an easier level.



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FEEDBACK IN YOUR PROFESSIONAL WORLD

As a professional, it is critical to know thy impact. It may seem ironic but the more teachers seek feedback about their own impact, the more the benefits accrue to their students. When teachers ask about who has been impacted, what they have been impacted by, and what the magnitude of impact is, then they are more likely to adapt their instructional methods and attend carefully to their students' learning progress. This is the essence of what we have called 'assessment for learning', which is better termed 'assessment for teaching'. Assessment of your students is a powerful way to learn about your impact.

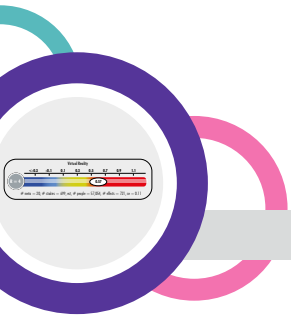
The beauty of this argument is that assessment for learning is now considered to be about the interpretations that teachers make about their actions, and takes the attention away from the nature of the tests. As Michael Scriven, who introduced these terms almost 50 years ago, noted, formative and summative refer to the interpretations not the test. A test can be interpreted by the teacher as formative in that the teacher modifies what he or she needs to do next, or it can be summative in that it comes at the end of a series of lessons. The more the teacher receives feedback from student engagement, then the more likely he or she is to adapt their actions and expectations and thus students are the beneficiaries.

IN PERSPECTIVE: ENSURING FEEDBACK IS EFFECTIVE

From the student view, receiving praise in the classroom is a social learning experience saying more about the teacher's goals than the student or attribute singled out for attention. Praise effectively informs the student of the things teachers approve. While this is an important message, it need not be repeated *ad nauseum*.

Students work out your habits, quirks, and dispositions quickly. Once that is out of the way, the class can get down to the serious business of learning without having to worry about what you will approve or disapprove of.

When praise is combined with feedback information then the latter is diluted and possibly nullified. Our claim certainly is not to never give praise; to the contrary it is welcomed by students. A modicum of praise can usefully set a pleasant climate in which to work. However, do not confuse praise with the process of providing feedback.



THE ROLE OF FEEDBACK

John Hattie and Gregory C.R Yates

Excerpted from *Visible Learning and the Science of How We Learn*

Instead, students are crying out for feedback that provides information they need to achieve their goals – where to next! They need to know how to close the gap between where they are now, and where they need to be. They are uninterested in evaluative post mortems about their past work unless there is crystal clear guidance about the next challenge and how best to get there. To be motivated is to be able to perceive how success is achievable within the short term.

One function of feedback is to assist learners discern just which goals are realistic and doable. Recall that one of the principles allied to the Willingham thesis (Chapter 1) is that we are motivated by perceivable and closable knowledge gaps but turned off by knowledge chasms. The feedback you offer your students provides the tools they need to be able to perceive the immediate path ahead, and so decide that it is really worth the effort. Since effort is a limited commodity, it cannot be squandered on things doomed to fail, or chasms too wide to bridge.

By way of summary, John Hattie and Mark Gan reviewed the extensive literature on the effective use of feedback principles within the process of instruction and arrived at several significant observations. Specifically:

1 It is important to focus on how feedback is received rather than how it is given.

2 Feedback becomes powerful when it renders criteria for success in achieving learning goals transparent to the learner.

3 Feedback becomes powerful when it cues a learner's attention onto the task, and effective task-related strategies, but away from self-focus.

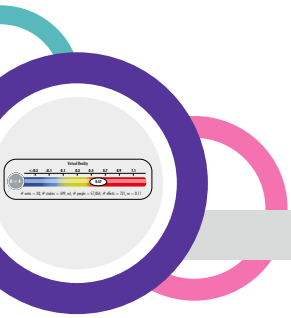
4 Feedback needs to engage learners at, or just above, their current level of functioning.

5 Feedback should challenge the learner to invest effort in setting challenging goals.

6 The learning environment must be open to errors and to disconfirmation.

7 Peer feedback provides a valuable platform for elaborative discourse. Given opportunities, students readily learn appropriate methods and rules by which respectful peer feedback can be harnessed.

8 Feedback cues teachers to deficiencies within their instructional management and can lead to efforts to improve teaching practices.



THE ROLE OF FEEDBACK

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STUDY GUIDE QUESTIONS

1 A type of empathy gap is apparent when teachers' and students' views on feedback are compared. What do students generally want from feedback?

2 Another gap appears in relation to how much feedback students claim they receive. What is the common finding here?

3 One finding is that feedback ought to take different forms in accord with student skill level. We can identify three such levels. Beginners need corrective feedback, but what type of feedback is of value to students at the other two levels?

4 Feedback reduces the gap between performance and desired states. Can you explain what that means? What motives are assumed by this idea?

5 How does praise differ from feedback? It is often assumed that praise is something that reinforces learning. Is this view consistent with the information given in this chapter?

6 Have you witnessed adults who seem to be praising students excessively? What observations would you make about such people? How do students react to high levels of praise?

7 Carol Dweck's studies have implicated praise as undermining effortful striving. Just how might this happen? What process is involved?

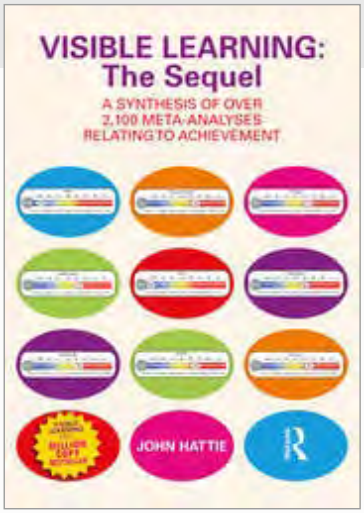
8 So what factors are important when using feedback to help students learn? Review the list from Hattie and Gan and try to see if you can add to this list.

Please note that because this FreeBook is composed of excerpts from several Visible Learning books, you may see references to other books or chapters that are not included. To delve deeper into any of the ideas or concepts laid out in these chapters you can purchase these books at www.routledge.com.

Some references from the original chapters have not been included in this text. For a fully referenced version of each chapter, including footnotes, bibliographies, and endnotes, please see the published title. As you read through this FreeBook, you will notice that some excerpts reference previous chapters – please note that these are references to the original text and not the FreeBook.

CHAPTER

5 THE CHALLENGE



This chapter is excerpted from

Visible Learning: The Sequel

By John Hattie

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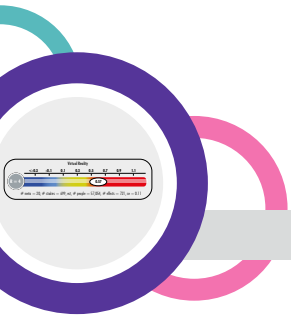

THE CHALLENGE

John Hattie

Excerpted from *Visible Learning: The Sequel*

So much has changed since *VL1* was published in 2008 (Hattie, 2008). The internet is now even more ubiquitous, iPads were released, climate change is now firmly on the agenda, same-sex marriage has been legalized in many countries, we experienced the global financial crisis, the UK voted for Brexit, there was the Arab Spring, and there have been 26 civil and international wars. In addition, we have seen the rise of populist leaders, the MeToo movement, the gig economy, *Angry Birds*, selfie sticks, the discovery of the Higgs boson, the first images of a black hole, the rise of electric cars, *Fifty Shades of Grey*, and the COVID pandemic has caused significant disruptions to schools.

Over this decade, my research career as a psychometrician and in education psychology went into the background as Visible Learning took over. I have become a grandfather (five granddaughters, one grandson); after 25 years together, I was married to Janet by Elvis Presley (thanks, Peter DeWitt), moved from New Zealand to Australia (following Janet who was head-hunted as professor of evaluation), saw my boys become men; I retired and am enjoying policy roles in government agencies. *Visible Learning* truly changed my ways of thinking and writing. Since *VL1*, I have published 75+ articles and 40+ books (Figure 5.1), and presented at 400+ conferences or events worldwide relating to *VL1* (Appendix A). Appendix B lists the chapters in the *Visible Learning: Guide to Student Achievement – Schools* (Hattie & Anderman, 2022), and these chapters provide more depth about many of the influences throughout this sequel (see also Hattie & Anderman, 2013, for further chapters). A mistake of many critics is to overly focus on the one book in 2009, as I have expanded, clarified, and explored many of the ideas in *VL1* in these other sources.

Improvements to the VL1 model also are a function of working with exceptional implementers, who took the model and turned it into school and classroom practice. The VL+ model has been implemented by this team in over 10,000 schools worldwide. Further, many systems, school leaders, and teachers have informed us about enhancing this process. This allowed greater refinement of the VL1 model,

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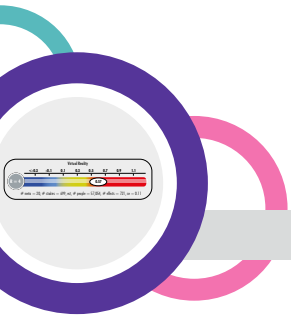
Figure 5.1 Books relating to VL.

more teasing out of the priorities, a closer consideration of implementation models and scaling up success, and a more detailed collection of evidence of the impact of the model. I also took on a more policy role when the Australian Federal Minister invited me to chair the board of the Australian Institute of Schools and Leaders (www.aitsl.edu.au/), and this has meant meeting all state and territory ministers and their director generals regularly (now up to my 61st in the 9 years as chair – we change our leaders a lot).



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The pressure was to write a second edition of *Visible Learning*, but I resisted. I knew that even my closest colleagues would not be happy when the effect of an influence changed even a little, that any changes would see a new ranking list inconsistent with previous versions, and when the focus would go back to the individual influences. The world of researchers has also moved forward, as there are many more meta-analyses and now other meta-analyses of meta-analyses, and the debates about the interpretation of effect sizes have become more sophisticated. I have learned a lot from my critics. You can spend your career as an academic and not many may notice, so it is an honor to have such world-famous critics.

Instead, this is a sequel, with more attention to the big underlying story. This story covers much more than in *VL1*, particularly as an additional 1,300 meta- analyses have been added (the production of meta-analyses did not stop in 2009). The growth is shown in Figure 5.2, with about 800 in *VL1* and now 2,100 in this sequel.

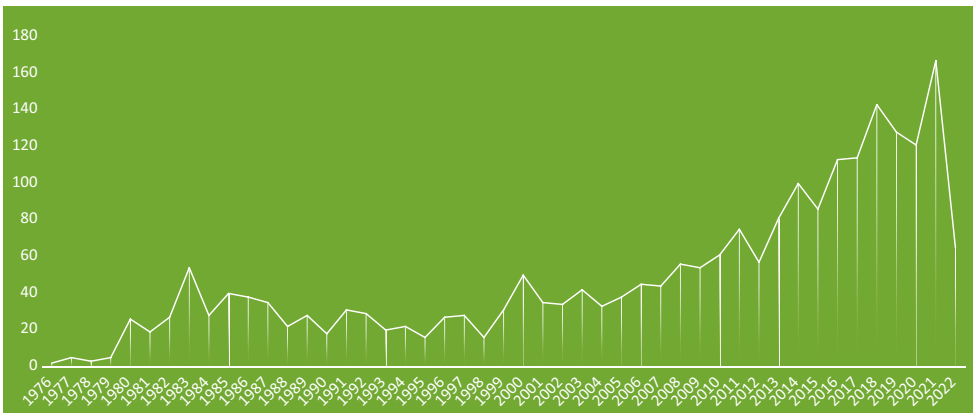
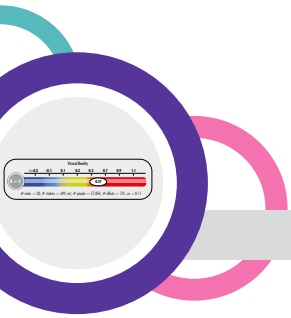


Figure 5.2 Number of meta-analyses per year.

The details matter, but I have relegated the details and references to all meta-analyses to an online resource. Metax (www.visiblelearningmetax.com) is a free website with all the meta-analyses, references, glossary, and FAQ, and it is updated regularly to include the more recent meta-analyses. In this sequel, there is no list of all metas or league tables but an emphasis on the major Visible Learning story or big messages. Too many read and critiqued *VL1* as if each influence stood alone despite my stating emphatically that it was the story and overlap that mattered. In *VL1*, I argued the aim was to build a story about the power of teachers and feed- back, and construct a model of learning and understanding. The sequel highlights the story and then provides a set of supporting accounts of this story.



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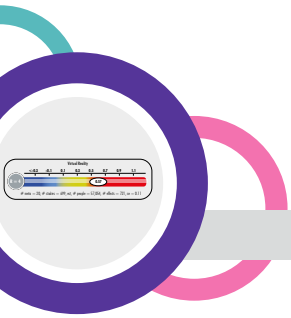
The same series of challenges identified in *VL1* are still topical: how to move beyond claiming what works to what works best; why the current grammar of schooling that serves many but far from all is so embedded in so many classrooms, and how to improve it; why the learning curve for teachers after the first few years is pretty flat; how to move beyond the inputs (the lessons, the intentions) to the moment-by-moment decisions that teachers make as they teach; how to focus more on learning; and most critical, how to incorporate research evidence as part of the discussions within schools. There remains a need for more focus on the use of successful models of implementation within systems, schools, and classrooms; the attention to the increasing turnover of leaders and its impact; the lack of building evaluation into programs from the outset; and the rush to find and fix failure and ignore the stunning successes we already have and how to upscale this success. Among the most significant improvements over the last ten years is that research evidence is now a regular topic for discussion in schools – this is not claiming it is privileged nor is it the determiner. But more regularly, teachers and especially school leaders seek the view of the research literature to add to the debates and decisions. The spread of more accessible resources has helped this process – such as Educational Endowment Foundation, Evidence for Learning, What Works Clearing House, Best Evidence Encyclopedia, and others. Gleeson et al. (2022) surveyed 492 teachers from 414 schools about their use of research evidence. About two- thirds reported using research over the past 12 months (91% for school leaders and 61% for teachers), particularly to "design and plan a new initiative" and to "mobilize support for an important issue or decision." This is the opposite of what Kirschner et al. (2022) call the pedagogy delusion: a set of beliefs and assumptions about what should happen in a classroom that is characterized by a rejection of evidence, an acceptance of the romantic and philosophical, a celebration of the superficial in the form of fads and myths, an assertion that pedagogy is an end in itself, and the creation of an often toxic culture for teachers of unsustainable workload.

The focus now needs to be on optimizing the implementation and mobilization of this research. Our work has shown that this means attending to the mind frames or ways that educators think about evidence, the implementation, and the impact of evidence, and this is more dominant in this sequel than in *VL1*.



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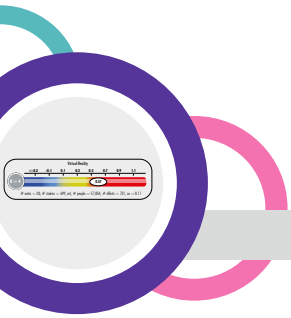
THE MISCONCEPTIONS

I wrote five versions of *VL1*. The fourth was the best, as it was resplendent with detailed stats, variances, conditionals, moderators, and 500 pages of beauty. My best critic, Janet, read it and asked, "Which two people in the world did you write this for?" Ouch. I expunged that version, and the final and fifth version was written. This time, she said, you have increased the audience from two to about ten – then Janet invented the barometer dials to provide more flow-through and common themes, and at the last minute, I added the appendix listing all influences in rank order – the league table. The league table led to the most common misunderstanding of the claims – too many aimed to tick off the influences at the top and disparage those at the bottom of the rankings. Others proclaimed that the influences were not unique, which showed they had not read a page of the book – as it was all about the overlap. More specifically, the aim was to explain the underlying story of those influences above and below the average of all influences or hinge- point of 0.40. The message is in the patterns, not the details; it is the interpretation of evidence not the evidence, the boldness of the big messages not the humdrum of decimal points.

In *VL1*, I noted the wars as to what counts as evidence for causation are raging as never before – some advocate only randomized control trials (RCT). RCTs are trials in which subjects are allocated to an experimental or a control group according to a strictly random procedure. There are now many RCTs in education despite many arguing that they are not possible or reasonable (Styles & Torgerso, 2018). I prefer not to use a method as a gold standard and raise the bar preferring Michael Scriven's (2007) claim that a higher gold standard relates to studies capable of establishing conclusions or "beyond reasonable doubt." Maybe this is too high a bar, but at least the evidence should be "clear and consistent" and more than a "preponderance of evidence," beyond probable cause," and certainly "exceed reasonable suspicion." I claimed that a major aim of *VL1* is to weave a story from the studies and their effect sizes that have convincing power, coherence, and generalizability. Building this story remains the mission of this sequel.

I noted in *VL1* what the book was *not* about, which has led to much confusion. I should have been more explicit that it was not about the intricacies of life in a classroom but more about the influences on students learning, doing, and being in classrooms – at the class, teacher, school, and systems levels. I have tried synthesizing the classroom observation research but had difficulty deciding on a standard effect measure. So instead, we developed an app (Visible Classroom) that



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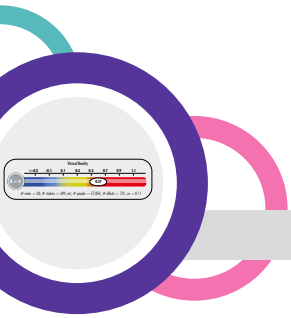
provides immediate transcripts of teacher talk with automated feedback, and this has been used in 17,000 hours of class experiences (see Chapter 8).We have built an experimental classroom such that we have replicated Graham Nuthall's (2007) intensive research using modern technology and have much data on the "hidden lives of learners" (Specjal, 2022). A major synthesis of classroom observation research of the lives of students in classes is sorely needed.

I noted that *VL1* was not about more generic factors that educators have little control over, such as social class, poverty, family resources, health in families, and nutrition. Educators cannot change these societal and family issues. These issues, however, can have substantial impacts in ameliorating their influences within the school. A major purpose of schooling is to provide ways for young people to move out of these conditions. Critics jumped on this claim to argue that I did not care about these factors and that issues such as poverty did not stop at the school gate. Again, these comments reflect their lack of opening the book, which discusses the *impact* of many of these issues within the school gates.

Another misunderstanding was the claim in *VL1* that it was not a book about criticism of meta-studies. I argued that these matters were dealt with elsewhere. This led to many saying that I did not care about quality and I included garbage, and again, they did not read much further past this comment. Slavin (2018) was very upset I did not use his "best-evidence" method, but this fails to acknowledge that I synthesized metas, not original studies, and as many have argued (Glass, 2019), asking about the impact of quality is a key focus of meta-analyses, and such studies should not necessarily be thrown out. Throughout *VL1*, I commented on specific studies (e.g., see the section on Learning styles, p.195–7) and queried some weird results in some studies (e.g., whole language), but I could have made more of the quality issue. Chapter 2 in this sequel deals with many of these issues, and a robustness factor is introduced for the meta-analyses.

Others have claimed I have a fixation on achievement and that there are many other critical attributes of schooling. Again, this ignores the claim upfront that "of course, there are many outcomes of schooling, such as attitudes, physical outcomes, belongingness, respect, citizenship, and the love of learning. This book focuses on student achievement, and that is a limitation of this review" (p. 6). It is pleasing to see syntheses of meta-analyses of motivation (Jansen et al., 2022) and learning strategies (Hattie & Donoghue, 2016), and I look forward to others synthesizing influences on some of the other important outcomes of schooling. I make no



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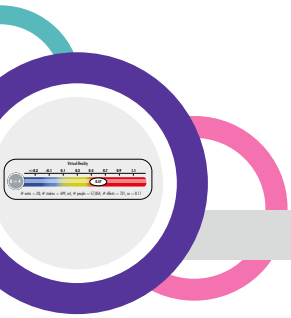
apologies for focusing on achievement and wonder what schools would look like if achievement were not an important outcome of schooling.

Others have questioned my utopian view of education or have been critical of my disparaging of teachers or making teachers the fall guys for criticism. By making teachers central to the most powerful influences on students, the criticism is I am blaming them for school failures. It is exactly the opposite: I credit the wonderful successes we have in schools to the expertise of teachers. Another critic wrote that I was inconsistent in praising teachers and then pointing out their limitations – which shows this critic's lack of understanding of what variance means. The VL data is clear – excellence is all around us, and there is much of it in our schools. The VL model is asking us to have the courage to reliably identify this excellence, create a coalition of this success, and invite others with lower impacts on their students to join this coalition. Often the biggest barrier is a lack of courage.

LOOKING BACK TO HELP MOVE FORWARD

The research in VL is based on what has been – and the current system has oodles of excellence. Looking back at what has been or rear-mirror phenomena can allow us more safely to move forward. VL aims to use this past research to identify the common attributes of this excellence. The *Turning Point* elaborates that this excellence is based on educators' evaluative thinking expertise, which is the essence of our profession (Rickards et al., 2021). This form of thinking is explored more throughout this sequel. What keeps me going is the many excellent leaders and teachers I meet when I travel the world. Perhaps I could be criticized for being more Pollyanna than Scrooge, but I have evidence to see the world of schools positively.

In *VL1*, I missed some crucial parts of the model. For example, I noted the power of teacher expectations but did not highlight the even more powerful influence of student expectations; I overly focused on teachers giving feedback but did not highlight the importance of whether or how this feedback is heard, under- stood, and actioned by students; did not put enough emphasis on the quality of implementation of teaching methods or school interventions; did not explore with sufficient depth the essence of the particular nature of thinking that underlines the effective educator; and missed the importance of teaching students multiple learning strategies and the skills to work in teams. I struggled to make sense of the remarkable variation in the effectiveness of many teaching methods, the low effect of teacher subject matter knowledge, and the low effects of many deeper teaching methods. Indeed, I



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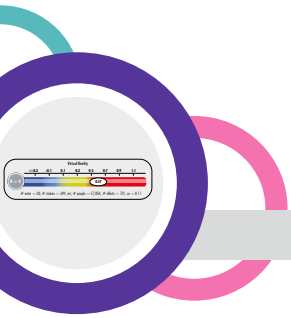
receive many emails from those advocating methods like problem-based learning proclaiming I am wrong (they mean the research is wrong) and those failing to understand that they may be brilliant, but for every teacher well above, there is another well below (this is what an average means). I have aimed to attend to these conundrums in this sequel.

TEACHING AND LEARNING

The central message has not changed and is simple – how teachers, leaders, parents, and students *think* matters most. Their mind frames, ways of thinking, interpreting, and evaluating are core to the success of teaching. It is their thinking that leads to their choice of interventions, devising and explaining the learning intentions and success criteria, knowing when a student is successful in attaining those intentions or not, having sufficient understanding of the students understanding that they bring to the task, and knowing sufficient about the content to provide meaningful and challenging experiences in various progressive pathways to success in learning. The VL model involves a teacher who knows how to implement a range of teaching strategies to provide the student when they seem *not* to understand, to give direction and redirection in terms of the content being understood and misunderstood and, thus, maximize the power of feedback received by the student. It is having the skill to get out the way when learning is progressing toward the success criteria. This is one of the major principles of Montessori methods, and getting out of the way relates to the notion of teachers gradually reducing responsibility and teaching students to become their own teachers (to know what to do when they do not know what to do).This claim is explored in the updated model of Visible Learning (Chapter 3).

One factor noted in the *VL1* model was passion – the joy, the thrill, and the infectious nature of the teacher to cause students to experience learning. Specifically, I noted that passion is among the most prized outcomes of schooling. While rarely explored in any of the studies reviewed in this book, it infuses many of the influences that make the difference in the outcomes. It requires more than content knowledge, acts of skilled teaching, or engaged students to make the difference (although these help). It requires a love of the content, a caring ethical stance to wish to imbue others with a liking or even love of the discipline being taught, and a demonstration that the teacher is not only teaching but learning – typically about the students' processes and outcomes of learning. This claim has been rarely noted, there are still too few studies on the power of passion, but it remains a visible feature of many classrooms, especially among the students.



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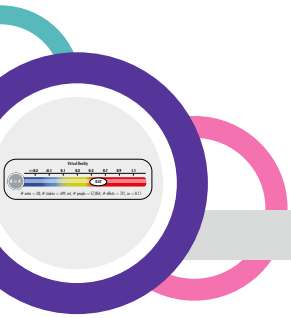
In *VL1*, there were many references to learning, and in this sequel, I have been more specific, devoting a chapter to how educators can influence students' learning strategies (Chapter 12) and how there needs to be greater alignment of teaching and learning methods. As part of the Science of Learning Project (www.slrc.org.au/), Greg Donoghue and I led a team to complete a meta-synthesis on learning strategies, and their effect on achievement led to a more integrated model of learning (Donoghue & Hattie, 2021; Hattie & Donoghue, 2016).We needed to build this model as we found some strategies were effective at some points in the learning journey but not at other points, and this led to the discovery that learning differs qualitatively at the knowing-that and the knowing-how phases of learning (the surface, deep, and transfer from *VL1*) – a notion well explored in the more qualitative models of learning (e.g., Marton, 2014). When we aligned the various teaching methods with this model, most teaching methods were silent or random about how they related to this learning journey, and an important plea is more attention to the intentional alignment of cognitive and learning skills.

The mantra from *VL1* remains: Visible Learning involves teachers seeing learning through the eyes of students and students learning to become their own teachers. It is more than how we teach and much more about the impact of our teaching. It is about the expertise of educators, how they engage in evaluative thinking, how they work together to critique their interpretations of student learning to move to their next teaching acts and decisions, their openness to learn and seek and receive and use feed- back, and their collective efficacy to ensure all (and this means *all*) students gain at least a year's growth for a year's input (and what a year's growth looks like in this class/school/ district). Note that it is growth to achievement (and not merely achievement). Teachers also need to engage students in the thrill of learning, develop skills and confidence to contribute to teams and peers, and develop each student's respect for self and others.

A DECADE OF IMPACT

The model developed throughout this sequel is deeply informed by the implementation of VL in schools around the world. This deep implementation started soon after the book was published. I was invited to speak at schools, and the after-school presentations did not affect much at all. At the time of publication, I led a team designing, developing, and implementing an elementary and high school assessment model in New Zealand schools (see www.easTTle.org). I had advised the Ministry that development was complete, and they needed to take back maintaining the tool.



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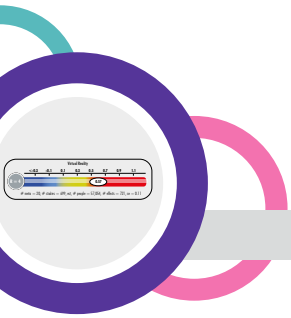
This meant a number of the team would become redundant. They asked to move into implementing VL in schools, and I set some conditions. It had to be scalable (not rest on the skills of one or a few people), it had to collect and show evidence of impact on the learning lives of students (much more than the usual professional learning criterion of whether the teachers were satisfied and learned much), and it had not to involve me presenting (my skill set is research and not PL). Debra Masters led the team, and soon, all three conditions were met and demand increased.

Initially, the program development and delivery were housed within Cognition in New Zealand. Cognition is a Trust company that had a track record of delivery (in New Zealand and overseas), and I knew the quality of the Cognition staff (I had been on the board for some years). After some years of success scaling up the delivery, Cognition changed direction, and the home of VL+ moved to Corwin in the US (www.visiblelearning.com/). A new team led by Julie Smith, a major refresh of materials, and a greater reach. It has been ten years since implementation commenced, and Clinton and Clarke (2020) completed an evaluation of the extensive database, case studies, and qualitative evidence. The title of their report was "A Decade of Impact." This implementation and evaluation have deeply informed my current thinking about the model.

THE FOCUS OF VL+

VL+ is a series of professional activities that promote individual learning and school- or system-based reform. These activities include professional learning events, coaching, evaluation and assessment, and a range of resources. Over the past decades, the major theme has morphed as new research emerged. It started with the power of feedback and then moved to know thy impact, with the focus on teaching the skills of evaluating the implementation of high-probability impact strategies within the teachers' or leaders' own school. The continued plea to see success in terms of student learning more than teacher satisfaction led to deeper dialogue about intentions and impact, using Martin Luther King's plea to focus first on the dream (Hattie & Zierer, 2018, pp. 166–168).The synthesis of learning showed the importance of tailoring teaching to include learning strategies and knowing the right time and context to use particular strategies (the Kenny Rogers idea, "know when to hold 'em, know when to play 'em," see Chapter 12).

Where VL+ was well implemented, it became apparent there was a strong undercurrent of collective efficacy across the school. Successful innovation can



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lead to enhanced teacher collaboration and satisfaction (Blömeke et al., 2021).We continued to monitor the implementation to detect when the emphasis was shifting back to primarily changing the staffroom and not the classroom. Hence, we began asking for collective efficacy to deliver at least a year's growth for a year's impact. This led to a focus on knowing what this year's growth looks like, knowing what all teachers meant by impact, and seeing the evidence of this notion of impact in the students learning. The hardest lesson from the decade of working in schools was less the understanding and use of research but that many schools lacked a concept of deep implementation. Schools introduced VL+, and it was hoped that it worked, so we spent much time developing the DIIE model. More recently, the research has aimed to identify educators' specific evaluative thinking skills that underlined the deeper implementation and consequential impact on students.

THE DIIE MODEL

Our experience in schools and the implementation research has led to the development of the DIIE model (diagnose, intervene, implement, and evaluate, see Figure 5.3) to ensure the deep application of VL. After agreement about what impact means, there needs to be an excellent diagnosis, choice of high-probability interventions relative to this diagnosis, choice of an implementation strategy (involving monitoring quality, fidelity, acceptability, and dosage of implementation), and evaluation throughout and also of the impact on students. Too often, interventions are chosen before diagnosing the issues for which the intervention is meant to address; too often, interventions are not introduced and fail because they were not sufficiently implemented; too often, adaptation leads to adding tips and tricks to the current model so that the intervention does not get implemented; and too often, evaluation is not undertaken in schools as they have already moved to the next intervention. DIIE aimed to provide more rigor and steps for leaders to monitor and evaluate the impact of interventions in a more formative manner.

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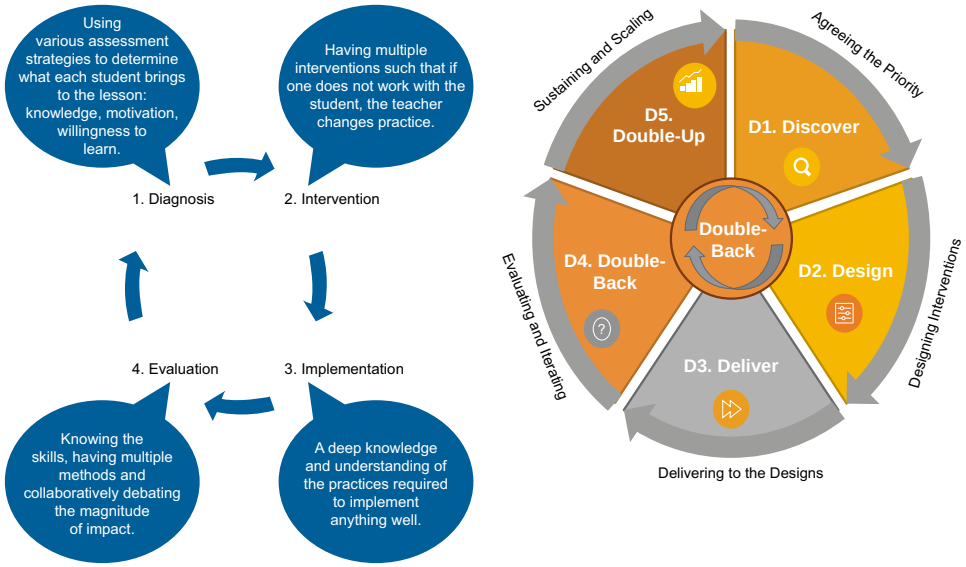
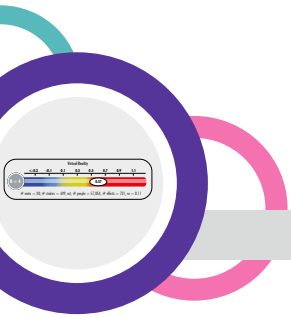


Figure 5.3 The DIIE model and 5D model.

We added a step relating to scaling up in the 5D model (Hamilton et al., 2022). This model was derived from a review of 50 implementation methodologies from various disciplines (such as computing, engineering, business, medicine), 23 implementation processes, meta and systematic review on implementation, and our experiences across more than 50 countries. The model is expanded in Table 5.1, and the relentless focus on the quality, fidelity, and adaptations when implementing remains one of the most crucial and difficult processes when working in systems, schools, and classes. One of the most difficult processes is de-implementation, and we have found it difficult to get educators to stop doing many of the less effective or inefficient practices (Hamilton et al., 2022).



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D1 Discover	D2 Design	D3 Deliver	D4 Double-back	D5 Double-up
Agree to one education challenge that's worth progressing above all else	Systematically search and agree on high-probability interventions to start and to stop	Implement and de-implement agreed designs	Monitor and evaluate your delivery chain and agree on priority actions	Maintain and grow your impact
1.1 Establish a backbone organization 1.2 Decide on the education challenge 1.3 Explain the education challenge 1.4 Agree what better looks like	2.1 Explore options in design space 2.2 Build program logic model(s) 2.3 Stress test logic model(s) 2.4 Agree what to stop 2.5 Establish monitoring and evaluation plan	3.1 Lock the delivery approach and plan 3.2 Undertake delivery 3.3 Collect monitoring and evaluation data	4.1 Monitor your evaluation 4.2 Monitor your delivery 4.3 Evaluate your delivery and agree on next steps 4.4 Evaluate your evaluation	5.1 Consider sustainability 5.2 Consider scaling

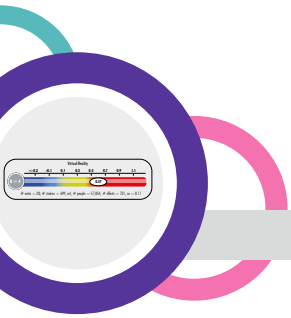
Table 5.1 A framework of the 5D implementation model

THE DECADE OF EVALUATION FINDINGS

Clinton and Clarke (2020) evaluated all the data from the decade of implementation of VL in over 10,000 schools worldwide. The evaluation included data from the School Capability Assessment, the Visible Learning Matrix, the mind frames survey, the feedback survey, and a meta-synthesis of 47 case study schools.

Half the schools that chose the VL+ implementation had priority goals to improve teaching. The other half aimed to have greater focus more on student learning, such as developing more effective learners; growing student independence as a learner; teaching students how to set their own learning goals and assess their own learning about those goals, how to engage in collaborative learning with their peers, how to know the difference between good behavior and learning behaviors, how to connect new information with known information, and how to engage in deep thinking.

We soon discovered that many schools were not ready to implement the VL improvement model. Some wanted tips and tricks to add to their current repertoire, some wanted to tick boxes that they had engaged with evidence-based programs,



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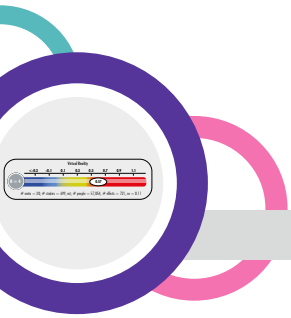
some wanted to know how to implement (a few of) the top influences in the VL league table, some had not won over the teachers as to the need for improvement, and many had not already engaged in diagnosing their cur- rent improvement needs. We employed a common refrain: what question is Visible Learning the answer to? We developed a readiness scale focused on motivation, capacity in relation to the intervention, the availability of resources (especially time), and a more general capacity for change within a school. This readiness survey is administered along with the School Capability Assessment (SCA). The SCA invites leaders and teachers to evaluate their impact across 16 dimensions, including teachers' and students' conception of learning, student progress through to higher achievement, and the school climate.

Across the schools, the average level of readiness to implement was 74%, which has much variability (from 20% to 100%).This determined the starting levels of engagement, and in some cases, where the score was very low, we requested the school spend more time and attention working with staff (e.g., around collecting and interpreting the SCA evidence, clarifying the intent of engagement with VL, reading the case studies from other schools, visiting or meeting with leaders from VL+ schools) so that they could be readier and more aware of what the model entailed – and thus, increasing the probability of the model having the desired impact on students.

The SCA and readiness review then leads to choices about specific interventions and the building of the within-school(s) program logic. Within the logic model, we pay much attention to identifying the shorter-term (within six weeks), medium-term (within one year), and longer-term (one to three years) desired out- comes. The leadership component of the SCA relates to setting strategic direction and school planning about engagement with VL+, identifying the critical aspects of student outcomes that were the priority focus, and identifying elements of the leaders' own knowledge and skills. This early work aims to develop the learning intentions and success criteria for the VL+ implementation, setting priorities, skills, coaching to interpret and triangulate the current school test data, teacher judgments, artifacts of students' work, and student voice about their learning.

The major reasons teachers wanted to engage in the intervention model were to enhance their mindsets, work more collaboratively with colleagues (e.g., thinking aloud about dilemmas, difficult situations or students, or teaching curricula topics), create more engaging and safe class climates where errors were seen as



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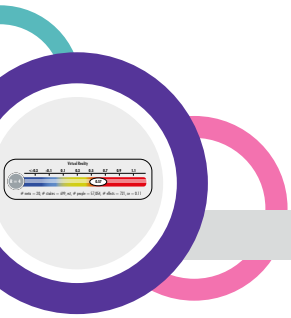
opportunities to learn, include *all* students in the dialogue of learning, work with students so that they understand their learning intentions and success criteria, improve the impact of feedback and building a feedback culture in every class, move from surface knowing also to include deeper understanding and transfer, move from collecting data to demonstrably interpreting evidence to lead to next teaching decisions, and apply interventions to identify, establish, foster and esteem a language of learning across the school (Hattie K., 2021).

As part of the diagnosis, we also interview samples of students. Typically, students want to learn the language of learning to articulate how they could learn more effectively and efficiently, and how they would know they had learned and attained the success criteria. In addition, they wanted more where-to-next feedback, opportunities to use the feedback provided, greater opportunity to listen to how others successfully learned, and more engaging tasks (engagement for students meant it was worthwhile doing the activities as they could then see their progress in learning, and not that they were interesting, fun tasks, or relevant to their future).

The School Capability Assessment was used not only at the outset but also after a year or so into the model – as a core part of the evaluation. The effect size changes included the following: is there a shared language of learning in this school (0.83), are students taught to be assessment capable (0.79), do educators clearly communicate valued learner characteristics to students (0.62), are educators familiar with different modes of effective feedback (0.58), does the school plan incorporate a focus on developing assessment-capable learners (0.57), do educators have a clear picture of the type of learners they are aspiring to have in their school (0.48), are their opportunities for students to give teachers feedback (0.47), and do teachers make the learning intentions and success criteria clear to students (0.42). After implementing the system-wide improvement model, 100% of school leaders argued that there were greater impacts on learning from involvement in the program, and 70–80% noted increased use of information in class and school decisions, improvements in the language of learning, increased engagement by students, and positive impact on teacher practice, and 84% reported enhanced impact on student achievement.

The effects on achievement were harder to capture but still critical to evaluating the model. Overall, there were 10% more students at or above the respective national (or regional) norms one year after implementation of the model, and the effect size gain from standardized tests of reading and math were greater than gains from normative samples (using the test manual norms). Blewdin and Baldwin (2015), for example,



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evaluated the implementation of a 2-year VL+ implementation across 32 schools (3,172 students) in Queensland. The achievement tests (math and reading) results showed that students in years 1 and 6 achieved higher scores and progressed at significantly greater rates than non–Visible Learning students.

An independent evaluation of the implementation of the VL+ model in 31 schools in Stockholm (Frej et al., 2017) concluded that VL+ was "well placed to contribute to a sustainable development of a school, act as a coherent perspective, which brings together different development efforts, and can create a common language use in the school around teaching and learning." The report noted other effects, such as students dedicating themselves to a new use of language around learning, which increased the quality of student-led development talks and generally improved the conversation about learning between students and teachers. School leaders saw VL+ as the binding element, the piece that made the jigsaw come together. It thus became easier to engage teaching staff in joint development projects, led to a higher degree of consensus in the school around teaching and learning, and helped break a culture of isolated islands; developed a new common language use around teaching and learning, a higher degree of professionalism, and increased interest among teachers to discuss and observe each other's teaching. There is now a deeply rooted and all-embracing approach at the school that everyone can learn, that all students can progress in their learning; students have also taken on a new language use regarding their own learning, which has significantly increased the quality of student-led development talks; students were better at assessing where they were in their own learning and generally improved the conversations about learning between pupils and staff.

Leeson (2017) evaluated the implementation in 150+ schools across the North- ern Territory of Australia. The school leaders rated the baseline measures on the School Capability Assessment at the outset (about their own schools, and following is a sample of ten schools – each school is on one line) as mainly not established (red), existent only in pockets (orange), evident within the school (green), or embedded in the school (blue).The top line represents the four major VL strands. By the end of the three years, most schools had moved from not established to evident or embedded in the school (Figures 5.4a, 5.4b, and 5.4c).

The changes in some of the major measures over these three years are depicted in Figure 5.5. The first line in each bar is the baseline, and the next three indicate how the mean across all the teachers and school leaders improved over the three

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years. The evaluation team's overarching finding was that there is sufficient evidence to indicate that the VL model continues to influence progress in school leader and teacher capabilities across the four strands in the SCA.

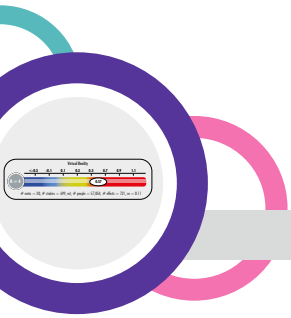
The greatest changes from observations of classrooms pre- to post-implementation were for clarifying questions about the learning intentions (39% to 55%), studentsworking in groups and having significant conversations among each other (19%

The visible learner				Know thy impact				Inspired and passionate teaching				Feedback			
Vision and values	Knowledge and understanding	Personal qualities	Professional practices	Vision and values	Knowledge and understanding	Personal qualities	Professional practices	Vision and values	Knowledge and understanding	Personal qualities	Professional practices	Vision and values	Knowledge and understanding	Personal qualities	Professional practices
1	1	1.5	1	1	1	1	1	1	1	1	1	1	1	1.5	1
2	2.5	2	2.5	2	2.5	1.5	2	3	2	2	3	NA	1	2	1
1	1	1.5	1.5	2	1.5	1	1.5	2	2	2	2	1.5	1	1.5	1
2	1	1.5	1.5	2	1	1	1.5	2	1	1.5	1	1	1	1.5	1.5
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	2	1.5	1.5	2	2	1	2	2	2	2	1	1	1	1.5	1.5
1	2	2		2	1.5	1	2	2	1	1.5	1.5	1	1	1.5	
1	1	1.5	1	1	1	1	2	2	1	1.5	1	1	1	1.5	1.5
NA	NA	NA	NA	NA	NA	3	1.5	2	2	2	2	NA	1	NA	1
1	1.5	1	1.5	1	1.5	2	2	2	1	2	1.5	2	1	1.5	1
1.22	1.44	1.50	1.44	1.56	1.44	1.35	1.65	1.90	1.40	1.65	1.50	1.19	1.00	1.50	1.17

Figure 5.4a Baseline School Capability Assessment.

The visible learner				Know thy impact				Inspired and passionate teaching				Feedback			
Vision and values	Knowledge and understanding	Personal qualities	Professional practices	Vision and values	Knowledge and understanding	Personal qualities	Professional practices	Vision and values	Knowledge and understanding	Personal qualities	Professional practices	Vision and values	Knowledge and understanding	Personal qualities	Professional practices
2	2	1.5	1.5	2.5	2.5	2	2.5	2.5	2	2	2	1.5	1	1.5	1
3	2.5	3	2.5	3	3	2.5	2.5	3	3	2.5	3	2	1	2	2
3	2.5	2	2	3	2.5	2	3	3	2.5	2	2.5	3	2	2	2
2	1.5	1.5	1.5	2	2	2	2	3	2	2	2	1.5	1	1	1.5
3	2	2	1.5	3	2.5	2.5	3	3	2	2.5	2	1.5	1	2	2
3	2.5	2	2.5	3	3	2.5	2.5	3	3	2.5	2.5	3	2	2.5	2.5
3	2	2	2	3	2.5	2	2	3	2.5	2.5	2	2	1	2	2
2	2	2	2	3	2	2.5	2.5	3	2	2	2	2	1.5	2	2
3	2	2	2	3	2	2	2.5	3	2	3	2.5	1	1	2	1
2	1.5	2	1.5	2.5	2.5	2.5	2	2	2	2	2	1	1	1.5	1.5
2.60	2.05	2.00	1.90	2.80	2.45	2.25	2.45	2.85	2.40	2.30	2.25	1.85	1.25	1.85	1.70

Figure 5.4b End of year 1



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The visible learner				Know thy impact				Inspired and passionate teaching				Feedback			
Vision and values	Knowledge and understanding	Personal qualities	Professional practices	Vision and values	Knowledge and understanding	Personal qualities	Professional practices	Vision and values	Knowledge and understanding	Personal qualities	Professional practices	Vision and values	Knowledge and understanding	Personal qualities	Professional practices
4	2	2	1	4	3	3	3.5	3	2	2.5	2.5	3	3	3	3
4	3.5	3.5	3	4	4	4	4	4	3	4	4	4	4	3.5	4
3.5	3	2.5	3	4	3.5	3	3.5	4	4	3	3	3	2	2.5	3
3.5	2.5	2.5	3	2	2.5	3	3	4	3	3	2.5	2	2	2.5	2.5
4	2.5	2	2	3	1.5	1	1	4	2	2	2.5	1	1	1.5	1.5
4	4	3.5	3	4	3.5	3	4	4	4	3.5	4	3	2	3.5	3.5
4	4	4	2.5	3	3	2	3.5	4	4	3	3.5	3	2	3	2
4	3	3.5	2.5	1.5	2.5	3	2	3	3	2.5	3	3	3	3	3
3	3.5	4	4	2.5	2.5	4	3	3	4	4	4	3	1	3.5	3.5
2	2	2	1	2	3	2	2	2	2	3	3	3	1	2.5	2
3.70	3.00	2.95	2.50	3.00	2.90	2.80	2.95	3.50	3.10	3.05	3.20	2.80	2.40	2.85	2.80

Figure 5.4c End of year 2. Extract from the School Capability matrix for 11 schools across three years of VL+ intervention.

to 32%), students could state that they were learning and talking to other students and the teacher about aspects of the learning (31% to 63%), student supporting their peers' learning (37% to 72%), students seeking feedback and seeing errors as opportunities (39% to 81%), and students being aware of their learning steps (30% to 52%). Across the measures of achievement, the reading and mathematics data shows statistically significant gains between time 1 and time 2, and effect size gains above 0.4 that can be attributed to the professional learning model across years 1–6 students. Reading effect size gains above 0.4 are also evident for years 7–10 students. The chief executive wrote to us that the "roll out of Visible Learning across the Government schooling Sector in the NT is having a measurable impact in our NAPLAN (national tests) data" (personal communication).

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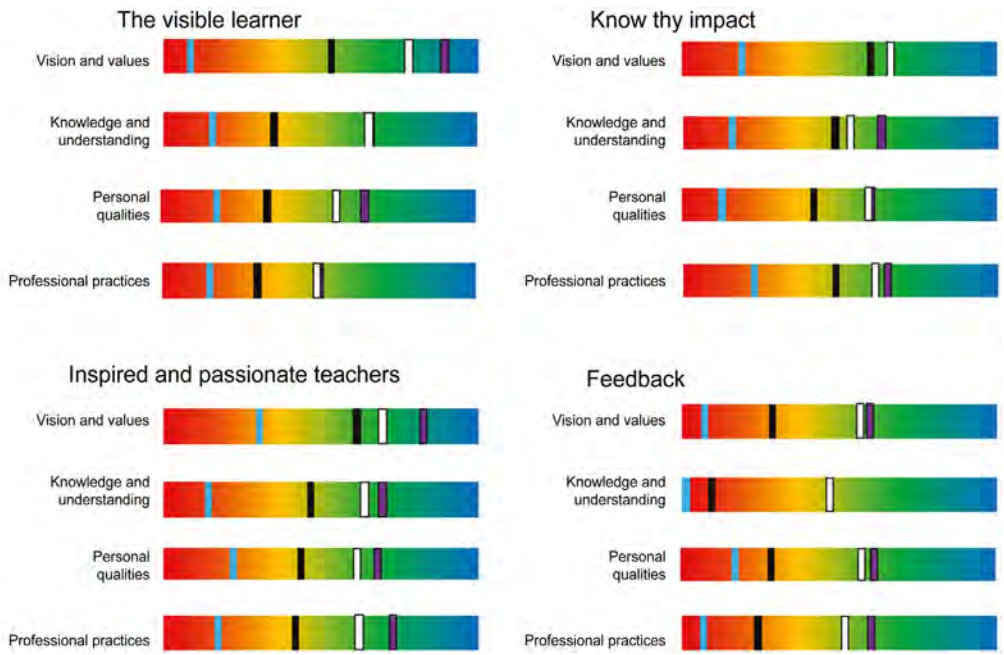

Figure 5.5 Baseline, first, second, and third year means for each capability measure.

In another study, a structural model was developed to establish how components of the model impact student achievement (Leeson, 2017). By modeling these relationships, it is possible to predict the VL model's causal effect on the achievement. These gains were particularly apparent for the low- and medium-performing stu- dents. Similarly, but to a slightly lesser degree, improvements in the mind frames survey constructs were also related to a gain in student achievement (Leeson, 2016). Figure 5.6 shows the model that provided the best fit to the empirical data collected for each of the model's components (Leeson, 2017).

These results show that the gains made by schools in their School Capability Assessments were strongly related to the subsequent gains made by their students in terms of their achievement results ($r = 0.78$). The strands representing the visible learner, inspired and passionate teachers, and feedback were particularly predictive of student achievement. Furthermore, the development of the leaders' aspirations (i.e., vision and values) ($r = 0.85$) and their strategic tools and actions ($r = 0.79$) had a strong direct relationship with student achievement gains over the year.

A major focus of the VL+ model is to enhance the ten teacher mind frames. About 30,000 teachers completed the mind frames survey (estimate of reliability alpha

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= 0.75). Figure 5.7 provides the means from time 1 and time 2, and the effect size changes from time 1 to time 2. The greatest improvements relate to "I see assessment about me,"" I focus on learning," and "I seek and receive feedback," and

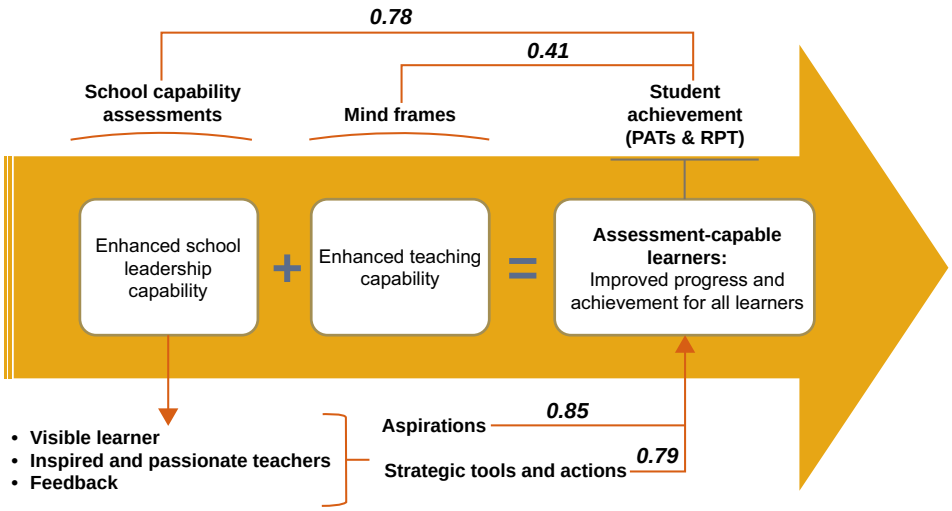


Figure 5.6 Modeling evaluation tools to assess their impact on gains made in student achievement data.

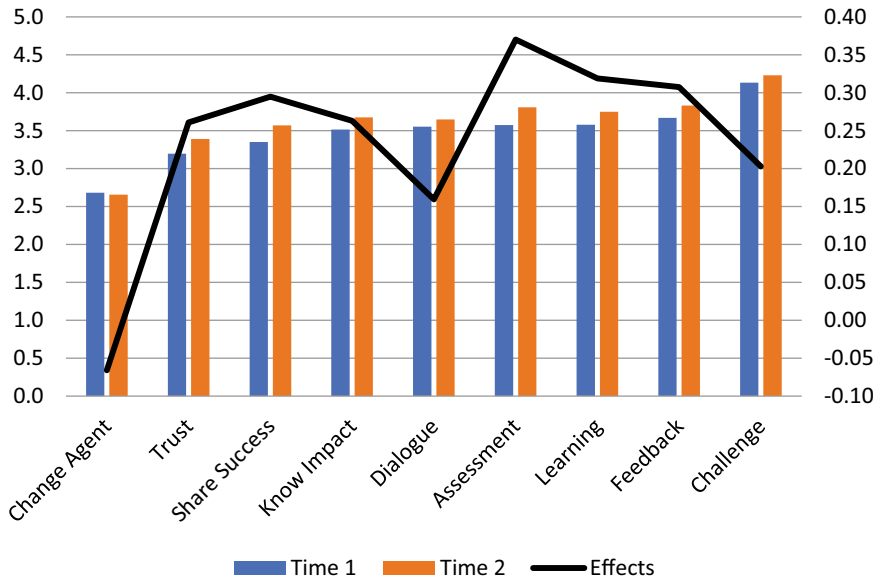
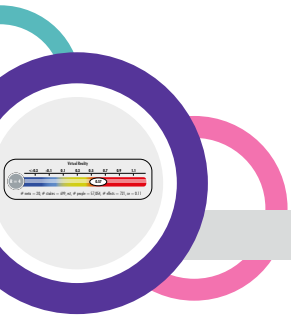


Figure 5.7 Mind frames means and changes from time 1 to time 2.



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the least change is on "I see myself as a change agent." Changing teachers' mind frames, evaluative thinking, and expertise to improve student learning (the core of "I am a change agent") is the most challenging part of the model. How come we are in a profession that struggles to acknowledge its expertise?

MIND FRAMES

A major message from *VL1* was to encourage a move away from debates concerning the structures of schools and classes, and how to teach – to the thinking or mind frames that are the core determinants of success in the learning lives of students. The argument is that what matters most is how educators think. This thinking is the pre- cursor to choosing high-impact strategies, ensuring the fidelity of implementation, and evaluating if there is an important impact on students. Accordingly, we identified ten mind frames for teachers, school leaders, parents, and students. Our more recent work has elaborated the major underpinning of these mind frames – in terms of evaluative thinking (see Chapter 3).The ten mind frames for teachers (Chapter 9) and school leaders (Chapter 7) cover impact, change and challenge, and learning:

Impact

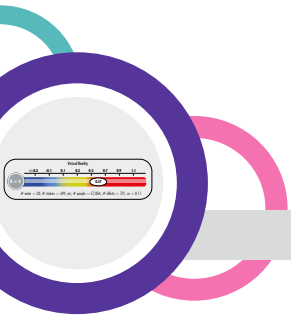
1. I am an evaluator of my impact on student learning.
2. I see assessment as informing my impact and next steps.
3. I collaborate with my peers and my students about my conceptions of progress and my impact.

Change and challenge

4. I am a change agent and believe all students can improve.
5. I strive for challenge and not for the goal of doing my best.

Learning focus

6. I give and help students understand feedback, and I interpret and act on feed-back to me.
7. I engage as much in dialogue as monologue.
8. I explicitly inform students what successful impact looks like from the outset.



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9. I build relationships and trust so that learning can occur in a place where it is safe to make mistakes and learn from others.
10. I focus on the learning and the language of learning.

We have also developed mind frames for students (Chapter 5), parents (see Chapter 6), and school culture and climate (Chapter 7).

CONCLUDING COMMENTS

This sequel is more about the big messages and the core notions underlying the evidence from the 2,100+ meta-analyses. The model in Chapter 3 uses this evidence from the research studies, augmented with experiences from implementing the model via VL+ in 10,000+ schools to build a set of propositions. Within subsequent chapters, there are short summaries of the major messages from the many influences, and most should be read in conjunction with elaborations in *VL1*. For details, it is essential to access Metax to see the detailed evidence and references to the various meta-analyses.