Visible Learning: The Sequel

When the original *Visible Learning*® was published in 2008, it instantly became a publishing sensation. Interest in the book was unparalleled; it sold out in days and was described by the TES as revealing "teaching's Holy Grail." Now John Hattie returns to this ground-breaking work. The research underlying this book is now informed by more than 2,100 meta-analyses (more than double that of the original), drawn from more than 130,000 studies, and has involved more than 400 million students from all around the world.

But this is more than just a new edition. This book is a sequel that highlights the major story, taking in the big picture to reflect on the implementation in schools of Visible Learning, how it has been understood – and at times misunderstood – and what future directions research should take.

Visible Learning: The Sequel reiterates the author's desire to move beyond claiming what works to what works best by asking crucial questions such as: Why is the current grammar of schooling so embedded in so many classrooms, and can we improve it? Why is the learning curve for teachers after the first few years so flat? How can we develop teacher mind-frames to focus more on learning and listening? How can we incorporate research evidence as part of the discussions within schools?

Areas covered include:

- The evidence base and reactions to *Visible Learning*
- The Visible Learning model
- The intentional alignment of learning and teaching strategies
- The influence of home, students, teachers, classrooms, schools, learning, and curriculum on achievement
- The impact of technology

Building upon the success of the original, this highly anticipated sequel expands Hattie's model of teaching and learning based on evidence of impact and is essential reading for anyone involved in the field of education either as a researcher, teacher, student, school leader, teacher trainer, or policy maker.

John Hattie is Emeritus Laureate Professor at the Graduate School of Education, University of Melbourne, Australia. He is one of the world's best-known and most widely read education experts, and his *Visible Learning* series of books have been translated into 29 different languages and have sold over 2 million copies.

Praise received for John Hattie's previous work:

"Reveals teaching's 'holy grail"

Times Educational Supplement

"John Hattie has made a supersized contribution to the improvement of learning. Visible Learning came crashing on the scene in 2009 and got the attention of all of us. What I especially like is how Hattie and team continue to be internally critical and externally open to considering all possibilities. Their new series in search of 'the Gold Standard' is typical of Hattie's commitment and skill in processing criticism and modelling continuous learning and improvement. A million books! Congratulations for a monumental achievement and the promise of more, and more"

Michael Fullan, OC. Professor Emeritus,
OISE/University of Toronto

"I'm not sure John knows his own impact - I can't think of anyone in education on this planet with a higher effect size. We teachers needed a sieve to sort the research that helps teachers make a difference, from the research that doesn't. John provided it and now we all know how to increase our own impact. Thank you John!"

Geoff Petty, Author of 'Teaching Today' and
'Evidence-Based Teaching'

"Education research suffers from an embarrassment of riches—there's too much of it! John Hattie has been a resolute leader in summarizing this wealth of information into practical terms that are digestible yet reliably capture the essence. Better still, they translate readily to classroom practice! Hattie's success and influence are richly deserved."

Dan Willingham, Professor of Psychology, University of West
Virginia, author of 'Why Don't Students Like School?'

"Everything changed when Visible Learning revealed the key messages from research into influences on learning. Thousands of studies brought together confirmed what we must focus on … educators across the world continue to have a reference point for what matters in guiding thinking and practice."

Shirley Clarke, Author of 'Unlocking Formative Assessment'
and 'Thinking Classrooms'

"John Hattie's contributions to generations of students, teachers, and educational leaders around the world are profound and lasting. He has that rare combination of courage and humility, fearlessly challenging conventional wisdom while continually improving and expanding his work. He makes our profession and the world of education better, and children on every continent benefit from his scholarship, wisdom, and practical guidance."

Douglas Reeves, Creative Leadership.net

"Hattie's work enables us to see the effects of what teachers do in the classroom. His work on lesson preparation is one of those must-reads for all teachers. In teaching we are often looking for those light-bulb moments of illumination. Hattie has mapped the hidden wiring."

Huw Thomas, Former Headteacher, college lecturer and Diocesan Director of Education

"In a world where educators are often tempted and encouraged to utilize the latest fads to support student learning, John Hattie's Visible Learning books serve as exceptional resources. Every practicing teacher, school administrator, and education researcher should have these books on their shelves."

Eric M. Anderman, Professor of Educational Psychology, The Ohio State University

"John Hattie has a dream that one day every child learns not by chance, but by design. He has a dream that one day the expertise which is all around us gets together and changes the system. He has a dream that one day teachers ask themselves the powerful question "What works best?" instead of only "What works". And he has a dream that one day teachers always seek maximum impact. And – most important – he lives his dream. He has started the fire with his passion. He sparked the learning. And he sparked the teaching. Congratulations John and: Know your impact!"

Klaus Zierer, Professor of Education, University of Augsburg, Germany, and Associate Research Fellow of the ESRC-funded Centre on Skills, Knowledge and Organisational Performance (SKOPE) at the University of Oxford

Taylor & Francis

Taylor & Francis Group

http://taylorandfrancis.com

Visible Learning: The Sequel

A Synthesis of Over 2,100 Meta-Analyses Relating to Achievement

John Hattie

Routledge
Taylor & Francis Group
LONDON AND NEW YORK

Designed cover image: Stephen Crumly

First edition published 2023
by Routledge
4 Park Square, Milton Park, Abingdon, Oxon, OX14 4RN

and by Routledge
605 Third Avenue, New York, NY 10158

Routledge is an imprint of the Taylor & Francis Group, an informa business

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data
Names: Hattie, John, author.
Title: Visible learning, the sequel : a synthesis of over 2,100 meta-analyses relating to achievement / John Hattie.
Description: First edition. | Abingdon, Oxon; New York, NY: Routledge, 2023. | Includes bibliographical references and index.
Identifiers: LCCN 2022050430 (print) | LCCN 2022050431 (ebook) | ISBN 9781032462035 (paperback) | ISBN 9781032462028 (hardback) | ISBN 9781003380542 (ebook other)
Subjects: LCSH: Learning—Longitudinal studies. | Teaching—Longitudinal studies. | Effective teaching—Longitudinal studies. | Teacher effectiveness—Longitudinal studies. | Academic achievement—Longitudinal studies.
Classification: LCC LB1060 .H389 2023 (print) | LCC LB1060 (ebook) | DDC 370.15/23—dc23/eng/20221228
LC record available at https://lccn.loc.gov/2022050430
LC ebook record available at https://lccn.loc.gov/2022050431

ISBN: 9781071917015 (Special Sales Paperback)

DOI: 10.4324/9781003380542

Typeset in Bembo and Helvetica Neue
by Apex CoVantage, LLC

Dedicated to Michael Scriven, evaluator, critic, and generous friend

Taylor & Francis

Taylor & Francis Group

http://taylorandfrancis.com

Contents

Taylor & Francis

Taylor & Francis Group

http://taylorandfrancis.com

Acknowledgments

I dedicate this book to my long-time friend, Michael Scriven. As noted throughout the book, he has been most influential in my thinking, and his immense breadth of knowledge, his generosity in sharing, and his skills to think aloud in such profound ways have improved me greatly. Janet and I met with him in San Francisco recently (he is 94), and he continues to inspire. When I review my greatest contributions to academia, it is that I have been his boss for 20 years and I have been his referee. He is the grandfather of evaluation; had Gilbert Ryle (see Chapter 3) as his supervisor; has written on car mechanics, the scientific method, computers and computing, applied logic, philosophy of religion and history, reasoning, creativity and critical thinking, causality and explanation, psychology, psychiatry and psychotherapy, parapsychology, and more. He is a University Blue in rowing; his first book was on the gas turbine in car design; he trained as a physicist and became a philosopher and educator; he was the world's first professor of evaluation (Janet is the second); he invented formative and summative evaluation, goal-free evaluation, and meta-evaluation; and he established the Faster Forward Fund. His works on evaluation are foundational, and he has never stopped writing and talking about evaluation as a trans-discipline. He is generous, he shared his deep knowledge of knives with my sons, and we have had great times together. Thank you, Michael and Mary-Ann.

Over the past 12 years, so many have contributed to this book – when they were implementing Visible Learning+™ (VL+) in their schools, reading the books and articles about VL by me and others, and critiquing and blogging about VL. The opposite of love is not hate but indifference, and I thank you all for caring enough to read, critique, and use the ideas.

When writing *VL1*, I gathered all articles on each of the 150 influences, drove to our beach house in Tairua, and read and wrote. It took 20+ years of doing this to work out the big messages, and the beautiful balcony overlooking the sea was my reward for this venture. For this book, technology took over, and no trees were spared printing out the meta-analyses or studies, and (now that we have moved from New Zealand to Australia) our beach house in Anglesea is less

cluttered with papers and misfiled articles. Core to this venture has been the support, advocacy, and critique of Janet. Typically, one thanks one's wife when writing a book (if for nothing else for keeping out of my way, ignoring my solitary pursuit, and grumping that I should spend more time with her and family). But this is not the case for me. Janet is my partner and my best critic, and many the night we have debated an influence, its part in the bigger picture, and the core role of evaluative thinking. She has raised the quality of the messages, the flow, the tone, and the big ideas such that the book moved from being a compendium of 350 influences to building on a big story (and she devised the barometer in *VL1* and thermometer in this sequel). After 40 years together, we have learned how to fight about ideas, reconcile, and move forward not only to create a family but to advance our work and careers.

The family has put up with *VL* for so long, and three are now teachers. I am so proud they became teachers, the best role in the world, and may they long enjoy having an impact on their students. The others are behavioral analysts, evaluators, and project managers. During writing *VL2*, we became grandparents and now have Joel, Kat, Ella, and Florence; Kyle, Jess, Emma, Danielle, and Charlie; Kieran, Aleisha, and Riley (John); as well as Edna and Patterson (who loved when I became stuck at home during the COVID pandemic, as then there were many walks and doggie treats).

Shirley Clarke read and critiqued every page of *VL2*, wrote the core of the reflections for each chapter, and is the connoisseur of feedback. Others who critiqued various chapters include Bill Tumner, James Chapman, Steve Graham, Jennifer Buckingham, Korbinian Kiendl, Dan and Lawrence Ingvarson, Lyn Yates, Tim Shanahan, Julie and Ray Smith, Sam Rodgers, John Almarode, Doug Fisher, Nancy Frey, Geoff Petty, Doug Reeves, Greg Ashman, Amy Berry, Peter Blatchford, Lyn Sharratt, Wolfgang Beywl, Klaus Zierer, Dylan Wiliam, and Jim Knight. We did not always agree, but this is the beauty of critics. So many others contributed to the ideas, including all the VL consultants from Corwin, Osiris, Bazalt, Cognition – you are core to the implementation, and I trust you see your influence throughout these chapters. The Corwin team have been partners for five years. I thank Michael Soules, Chris Devling, Sonja Hollins-Alexander, Vania Tiatto, for leading this work.

Bruce Roberts has been my Routledge editor from when we first met in Budapest, through *VL1*, this sequel, and many other ventures. Your commitment to quality, your gentle but persuasive hassling to endure, the great meals and fun times help make it all worthwhile – and his team in production have added so much.

And to those of you who have used the ideas in your school and class, may you continue to critique, evaluate, and know thy impact.

CHAPTER

1 The challenge

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 1.1), 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,

DOI: 10.4324/9781003380542-1

Figure 1.1 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).

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 1.2, with about 800 in *VL1* and now 2,100 in this sequel.

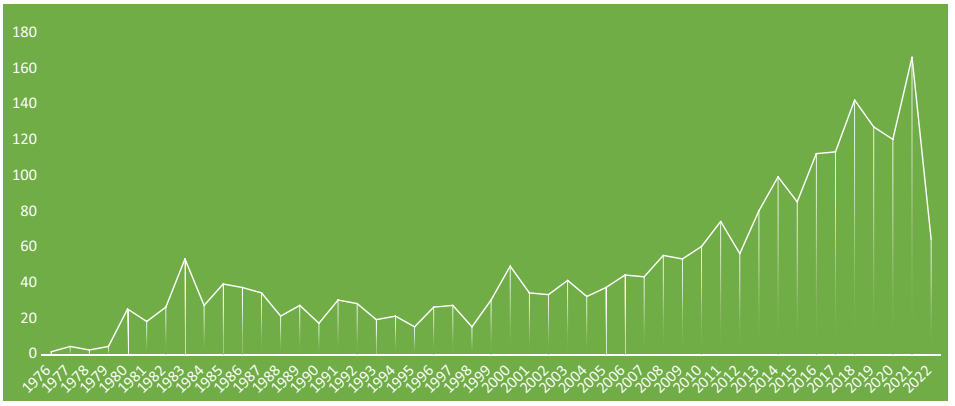

Figure 1.2 Number of meta-analyses per year.

The details matter, but I have relegated the details and references to all meta-analyses to an online resource. Meta$^{x™}$ (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 feedback, and construct a model of learning and understanding. The sequel highlights the story and then provides a set of supporting accounts of this story.

The challenges

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*.

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 (VisibleClassroom) that 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 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, understood, 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 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.

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 feedback, 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. 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 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 1.3) 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.

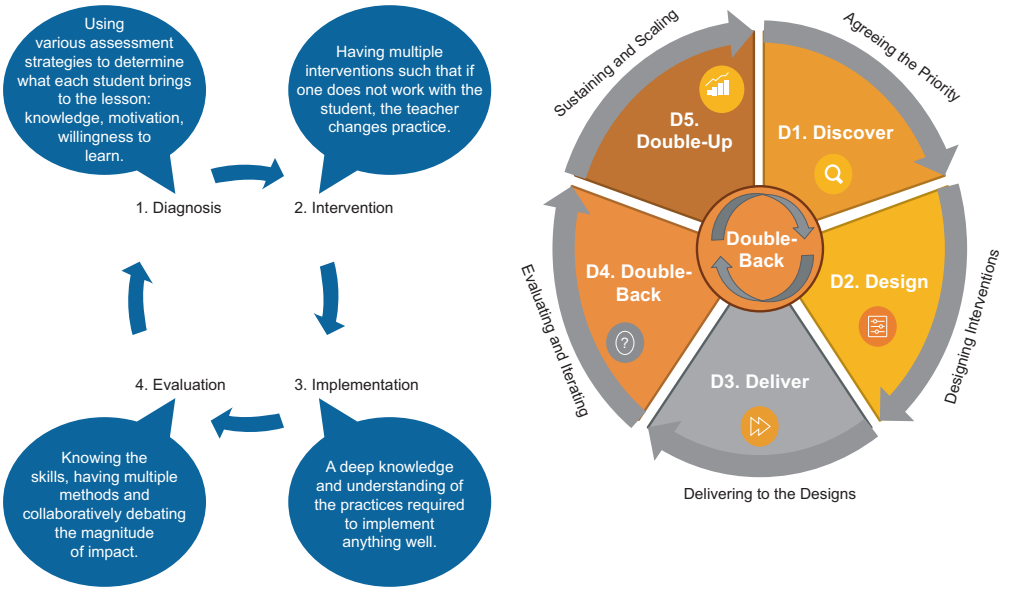

Figure 1.3 The DIIE model and 5D model.

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 1.1, 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).

Table 1.1 A framework of the 5D implementation model

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

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, 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 current 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%, but there is 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 outcomes. 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 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, 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 Northern 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 1.4a, 1.4b, and 1.4c).

The changes in some of the major measures over these three years are depicted in Figure 1.5. 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 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%), students working 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 1.4a 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 1.4b End of year 1

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 1.4c 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).

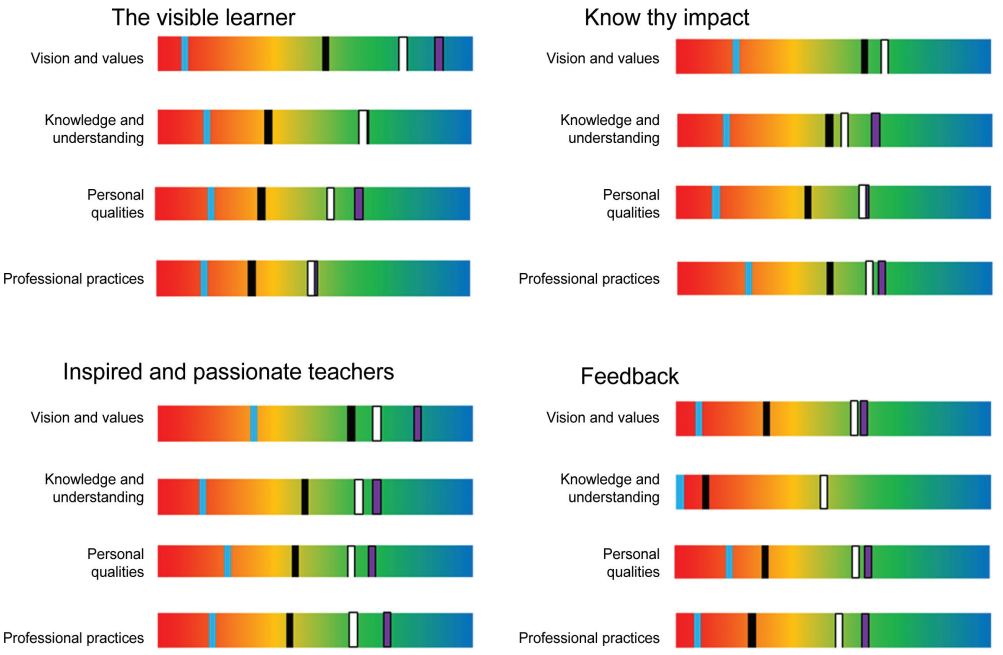

Figure 1.5 Baseline, first, second, and third year means for each capability measure.

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 students. 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 1.6 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 = 0.75). Figure 1.7 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

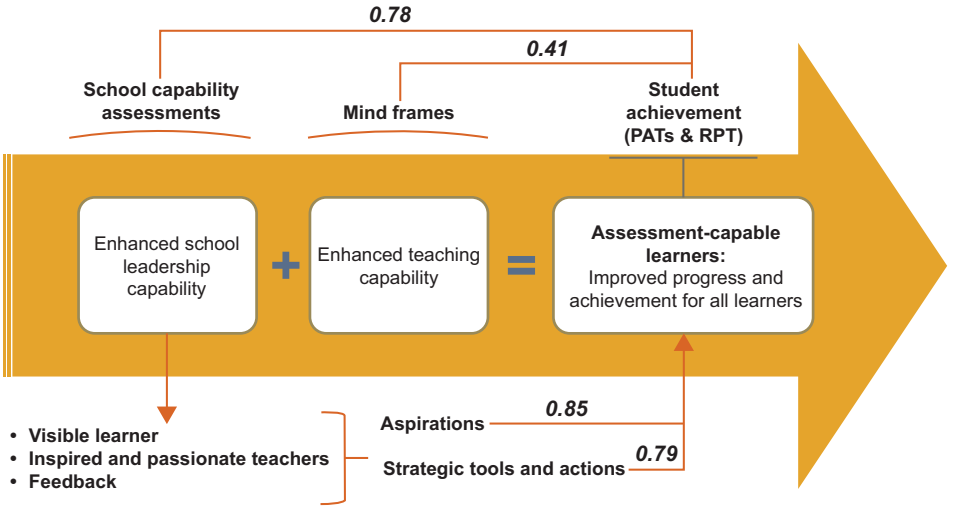

Figure 1.6 Modeling evaluation tools to assess their impact on gains made in student achievement data.

Source: Leeson (2017)

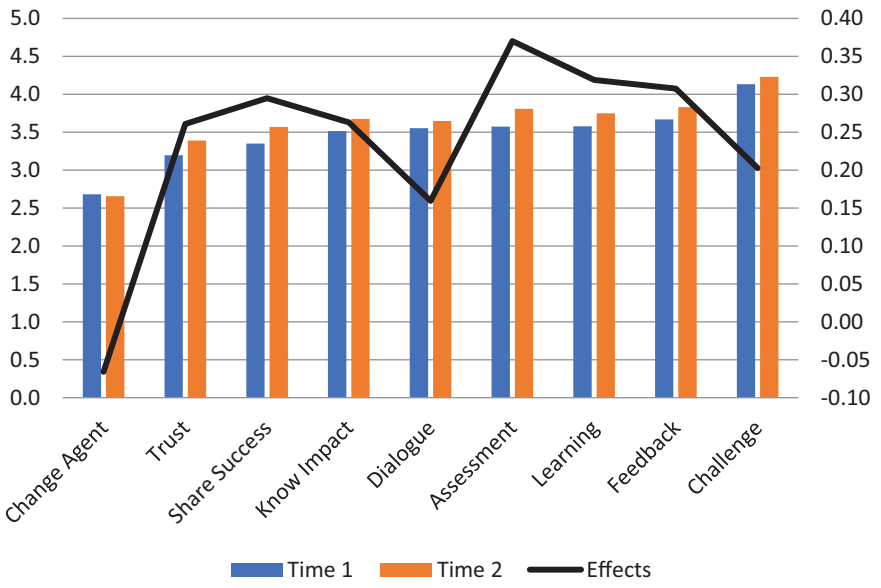

Figure 1.7 Mind frames means and changes from time 1 to time 2.

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 precursor 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 feedback to me.
7. I engage as much in dialogue as monologue.
8. I explicitly inform students what successful impact looks like from the outset.
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 Meta$^{x™}$ to see the detailed evidence and references to the various meta-analyses.