High-Impact Teaching Strategies (HITS) in the IB MYP and DP: A Synthesis from Visible Learning: The Sequel

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Abstract

This booklet synthesises the most recent findings from John Hattie's **Visible Learning: The Sequel** (2023) and the **Visible Learning MetaX database** to present a coherent, evidence-informed framework of **High-Impact Teaching Strategies (HITS)** for international secondary school contexts, with particular alignment to the **IB Middle Years Programme** (MYP) and **Diploma Programme** (DP). Drawing on over 2,100 meta-analyses encompassing more than 300 million students, the synthesis foregrounds effect size (Cohen's d) as a comparative indicator of instructional impact, using the d = 0.40 "hinge point" as a benchmark for accelerated learning.

The most powerful drivers of improvement are not isolated pedagogical techniques, but **shared professional mindframes** and evaluative practices. "Super factors" such as Collective Teacher Efficacy (d = 1.57), Teacher Estimates of Achievement (d = 1.62), Student Self-Reported Grades (d = 1.33), and Conceptual Change Programs (d = 1.16) are examined as systemic levers that amplify the effectiveness of all subsequent instructional strategies.

High-impact approaches for surface learning, deep learning and transfer (including metacognitive strategies, feedback, reciprocal teaching, and transfer strategies) are presented as examples.

By integrating Visible Learning with inquiry-driven IB pedagogy and Project Zero's Cultures of Thinking, the booklet emphasises intentional strategy selection, contextual judgement, and ongoing evaluation of impact. It concludes that sustainable improvement depends on teachers positioning themselves—and their students—as visible learners, continually calibrating practice against evidence of learning rather than compliance or activity.

About

Summary and synthesis by Stephen Taylor (with some structure, input and review from Gemini), connecting Visible Learning: The Sequel (2023) with MYP & DP. Appendices include further alignments with IB and PZ frameworks.

Contents

I. Introduction

A. What do we mean by "Evidence-Based"?

Visible Learning, led by **Professor John Hattie**, provides the world's largest evidence base identifying which educational influences most reliably accelerate student achievement.[1] At a time where educational trends and fads are increasingly polarised, confusing and aggressively marketed, having a secure foundation of evidence can inform leadership and instructional decisions.

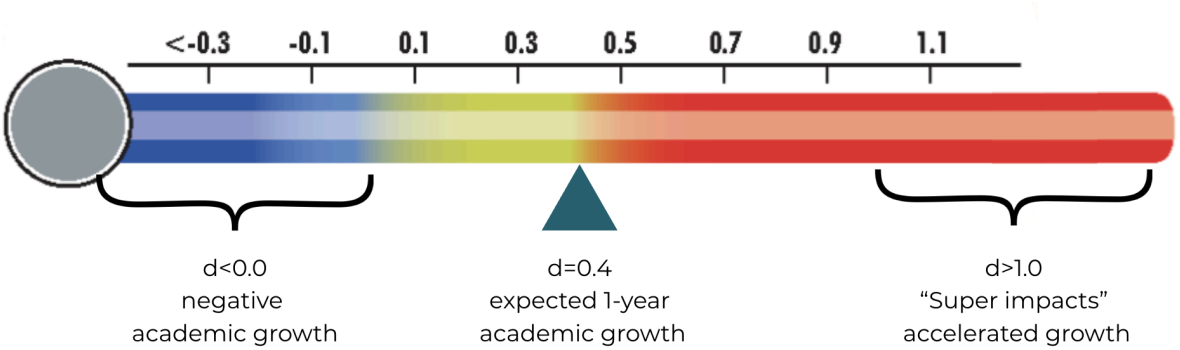
This research uncovers clues to achieving accelerated learning. Visible Learning asserts that teachers should move beyond simply adopting practices that keep students learning at an average rate (and work to mitigate poor practices that cause stagnation or reversal). In a world of choices, these clues might help align goals and impacts.

This distinction is quantified by the central metric of Hattie's work: the **effect size**, or Cohen's *d*. This standardized measure quantifies the magnitude of an intervention's impact.

- Across the vast array of educational variables studied, the average effect size, the "hinge point," is *d=0.40*.[1]
- This value is interpreted as the average progress a student makes in one year of schooling.

Consequently, any strategy adopted by a school or teacher should strive for an effect size demonstrably greater than *d=0.40* to justify its implementation, as this signifies a rate of progress that actively accelerates student learning beyond the expected developmental curve.[3]

Visible Learning presents an "effect size thermometer":



B. The Visible Learning Research Base: A Meta-Meta-Analysis

The Visible Learning research base is a “meta-meta-analysis”: a synthesis of the findings from thousands of individual meta-analyses.[4] Since the publication of the foundational work in 2008, the scope of this synthesis has expanded dramatically. The original study was based on approximately 800 meta-analyses.[5] By 2015, the list of influences had grown to 195, based on nearly 1,200 meta-analyses.[4]

The most recent iteration, detailed in *Visible Learning: The Sequel* (2023) and supported by the Visible Learning MetaX database, synthesizes evidence from over 2,103 meta-analyses, comprising more than 132,000 studies, and involving over 300 million students worldwide.[1] This scale underscores the reliability of the resulting rankings, which categorize influences into domains such as Student Factors, Home, School, Curricula, Teacher, Classroom, and Teaching Strategies.[1]

The persistence of the *d=0.40* hinge point throughout this massive expansion of data is significant. Despite the doubling of the analyzed meta-analyses, the average educational intervention remains fixed at the expected year’s growth.[2]

This observation implies that the fundamental challenge in education is not a lack of research or interventions, but rather the consistent implementation of highly effective practices that surpass the average. The true focus of the research, therefore, lies in identifying and institutionalising the factors positioned in the "red zone" of the thermometer (desired effects), which represent effect sizes greater than 0.40.[9]

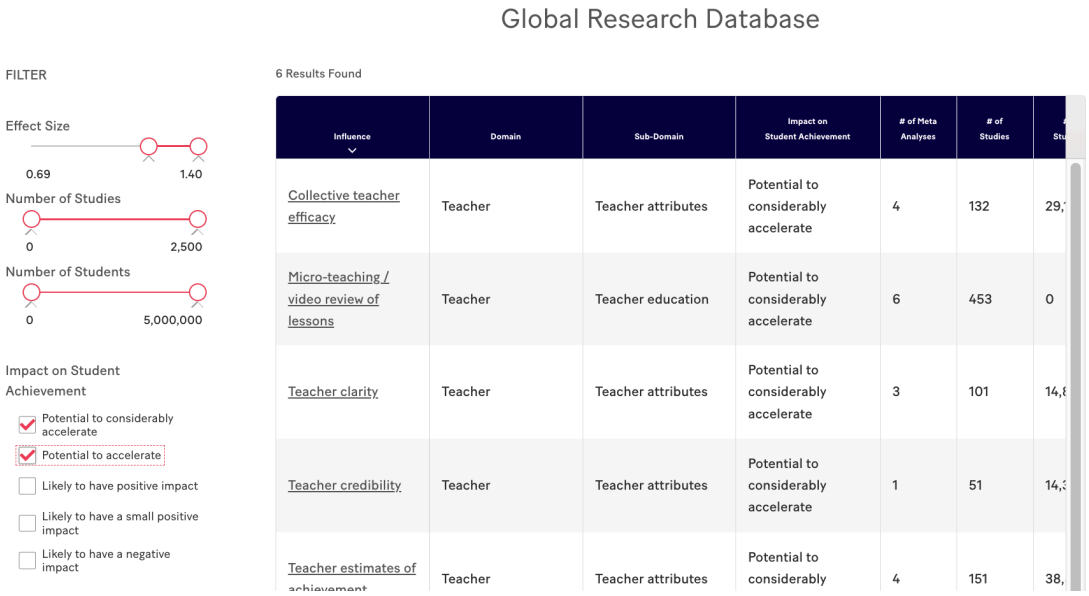
C. Methodological Nuance and Critical Contextualisation

While the scale of Visible Learning offers a powerful evidence base, it requires careful, nuanced interpretation. Critics note that synthesising diverse studies risks “apples with oranges” comparisons, where broad categories (such as inquiry-based teaching) mask important variation—though consistently positive effect sizes suggest multiple forms are effective. Earlier publications also contained minor calculation errors (e.g. CLE scores), though the core Cohen’s d rankings remained sound. More substantively, smaller studies sometimes report higher effects than large-scale research, potentially inflating average effect sizes..[10]

These methodological challenges reinforce the necessity of viewing the rankings not as guaranteed outcomes, but as a robust benchmark for prioritising conversations and actions.[10] The enduring message, which remains unchanged across all updates since 2009, is that the key to making a difference is the visibility of teaching and learning.[2] Teaching becomes visible when the student knows what to do and how to do it; learning becomes visible when the teacher knows if learning is occurring or

not. This requires teachers to fundamentally see themselves as evaluators of their impact on student learning.[3]

The Visible Learning Meta[X] database (updated 2024), is an excellent resource for investigating the impact sizes of different factors and strategies. You can search by area of focus (e.g. teaching vs student impacts) and apply filters to different levels of potential impact: https://www.visiblelearningmetax.com. This work may be useful in further studies and literature reviews.



D. Visible Learning (Hattie) vs Visible Thinking (PZ/Ritchhart)

They're not the same thing, but increasingly interpretations of Visible Learning have aligned with the core tenets of Ron Ritchhart & Mark Church's *Creating Cultures of Thinking (CoT)* and *Making Thinking Visible (MTV)*. Teachers with a working understanding of both approaches are well-suited to the IB MYP and DP contexts.

See **Appendix I** for summary comparisons and **section VI (inquiry)** for more information. See learn.wab.edu/faculty/attl/pz/ for WAB's resources on CoT, MTV and protecting thinking in the age of AI.

II. High-Impact Teacher and School Mindframes (The Super Factors, d>1.0)

The highest-ranking influences in Visible Learning, often termed "super factors" (d > 1.0), are predominantly **psychological** and **systemic** rather than specific techniques. They highlight the power of shared beliefs and professional judgment, underscoring that cultural and mindset shifts must precede pedagogical reform.

A. The Ten "Visible Learning" Teacher Mindframes

Hattie presents ten "teacher mindframes" that shape effective teaching (VL: The Sequel, p18):

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.

These "mind frames" are developed through a range of high-impact strategies. Visible Learning does not prescribe universal teaching methods; rather, it emphasizes teacher expertise, informed by intentional strategy selection and close attention to impact on learning.

B. Collective Teacher Efficacy (CTE, d=1.57): "We Cause Learning"

Collective Teacher Efficacy (**CTE**) consistently ranks among the most impactful influences, boasting a substantial effect size of d=1.57.[4] This factor originates from Albert Bandura's work on self-efficacy and is defined as the shared belief among teachers that, as a group, they possess the joint capabilities to organize and execute the courses of action required to produce given levels of student attainment.[13]

The Causal Mechanism of Collective Efficacy

CTE effect size is nearly four times the average effect size of d and more than double that of typical feedback (d=0.72) [13]. This demonstrates that belief is a powerful catalyst. When teachers hold a strong collective conviction that they, as a team, can influence student learning, they exhibit increased persistence in the face of challenging students or demanding content. They are more likely to experiment with novel pedagogies and maintain a higher threshold for adopting and implementing effective practices with high fidelity.[14] Crucially, CTE reframes accountability: teachers attribute outcomes to collective instructional effort rather than fixed external factors.

Practical Implementation Guide: Building the Engine

Building Collective Teacher Efficacy requires systemic, intentional structures rather than simply boosting morale. The process involves validating instructional improvement through data and focusing relentlessly on outcomes.[15]

1. **Validate Impact Explicitly:** Schools must use dependable evidence and data sources to make the link between specific teacher actions and measurable student outcomes explicit. Collaborative discussions must revolve around reflective questions such as, "What was the impact when I did X?" and "How did X affect the students?".[15]
2. **Foster High Trust Collaboration:** CTE is fundamentally relational, requiring a high level of trust among staff.[16] School leaders must set clear expectations for formal, frequent, and productive teacher collaboration. This time must be protected and oriented toward identifying specific student learning needs and developing instructional adjustments.[15]
3. **Orient Work Around Outcomes:** The focus of all professional collaboration—whether in professional learning communities (PLCs) or grade-level teams—must be centered on whether students achieved the essential understandings and skills, and how that achievement is measured.[15] This ensures that energy is directed toward results rather than simply activities.

C. Teacher Estimates of Achievement (d=1.62)

Teacher Estimates of Achievement holds an effect size of d=1.62.[4] However, the interpretation of this factor is frequently misinterpreted in educational practice. It does not refer to setting vaguely high expectations; rather, it reflects the accuracy and precision of a teacher's knowledge concerning their students' current level of achievement and their likely performance trajectory.[4]

Mechanism: The Evaluator Mindset and Precision Teaching

This factor underscores Hattie's primary mindframe for successful teaching: *the teacher acting as an evaluator of their own impact*.[3] A high effect size here reflects a teacher who is highly skilled at diagnosing student needs, anticipating misconceptions, and accurately predicting student performance based on continuous formative assessment. This precision allows for immediate instructional adjustment, making teaching truly visible to the teacher.[3] The high impact is derived from the constant, evidence-based calibration of instruction to student needs.

Practical Implementation Guide: Moderating Judgments

To maximize this effect size, teachers must commit to rigorous, evidence-based moderation of their professional judgment:

1. **Use Pre-Assessment to Inform Instruction**: Employ structured pre-assessment quizzes or tasks to establish baseline knowledge and inform instructional planning.[12]
2. **Routinely Check and Challenge Bias**: Teachers must actively reflect on potential biases (e.g., gender, English as an Additional Language (EAL), or Special Educational Needs and Disabilities (SEND)) that might lead to low expectations based only on prior data.[12]
3. **Implement Moderated Assessments**: Engage in formal moderation processes with colleagues to compare predicted results against actual attainment. Tracking this prediction accuracy over time serves as a direct professional learning mechanism, improving the teacher's evaluative skill and instructional accuracy.[12]

III. Inquiry as a Foundation of an IB Education

Inquiry is central to the IB's approaches to teaching and learning (ATTL), yet may remain poorly understood in secondary school contexts. Traditional measures of inquiry-based teaching have a moderate effect size of d=0.49. Within the meta-analyses, effect sizes are hugely variable. This is one domain where not all comparisons are equal, as definitions of inquiry vary considerably... yet measurement of effect size remains pinned to external assessments.

Inquiry is not the discovery of a list of facts or skills that will be externally examined; it is a deep pedagogy that requires active teacher engagement. In the context of a high-agency IB school, **a solid definition of inquiry** needs to be the root of the pedagogical approaches that follow. This definition from Taylor (2014) is an example:

> ***Inquiry is critical, creative reflective thought. It builds on a solid foundation of accessible, well-learned knowledge, skills and conceptual understandings, inviting learners to take action on their learning and ask "what if...?"***

Through this definition, we can see a constellation of constructivist and high-impact strategies are required, for example:

- Collective teacher efficacy (d=1.57)
- Student self-reported grades/expectations (d=1.33)
- Conceptual change programmes (d=1.16)
- Feedback (d=0.90)
- Constructivist teaching (d=0.9)
- Metacognitive strategies:
    - *Transfer strategies (d=0.86)*
    - *Argumentation (d=0.86)*
    - *Classroom discussion (d=0.82)*
    - *Deliberate practice (d=0.79)*
    - *Elaboration and organisation (d=0.75)*
    - *Evaluation and reflection (d=0.75)*
    - *Teacher clarity (d=0.75)*
- Project-based learning (d=0.78)
- Reciprocal teaching (d=0.74)
- Self-verbalisation/self-questioning (d=0.67)
- Success criteria (d=0.64)

Effective inquiry requires **excellent, collaborative teaching practices** and **critical attention to the impacts of learning on learners**. The expert inquiry teacher knows which strategies to use and when, planning with intention and actively building the development of learner agency, self-efficacy and metacognition.

IV. Direct Instruction is Valuable and is NOT "Teacher Talk"

Direct instruction (DI) (d=0.56) is often framed as a neo-trad counter to (ineffective) inquiry. This is not the case, however: all teachers are *teachers*. We must be able to perform our core duties with excellence and clarity. Read VL:TS p360-363. Within a high-quality, inquiry-driven learning environment, direct instruction (at the right time, in the right way with attention to impact), can accelerate all students' learning.

Excellent DI has the potential to spark joy and energy through the teacher's enthusiasm for the subject; rambling does not. It can provide the "just right" explanation at the "just right" time, and ensure all students understand and are progressing towards personal and shared goals.

Direct instruction has seven key components:

1. Clear, well-planned intentions.
2. Clear success criteria for students.
3. Building commitment or engagement in the task.
4. Teacher modeling, clear explanation and efficient teacher talk (not unplanned waffle).
5. Guided practice with timely, actionable feedback.
6. Independent practice that is checked.
7. Effective closure.

Lecturing has a surprisingly low impact (d=-0.26), particularly for deeper learning goals. Lecturing, unplanned teacher talk, reading from slides etc. cannot be considered direct instruction. Explicit instruction (d=0.63) connects to DI, and may be more usefully interpreted as targeted teaching to the group or individual on a concept or skill.

Reference: Rosenshine's Principles of Instruction

Barak Rosenshine's Principles of Instruction may help scaffold excellent DI lessons, within the inquiry framework. These align with more recent cognitive science:

1. Daily review (and re-teaching where needed).
2. New materials in small steps (don't overload working memory).
3. Effective questioning.
4. Modeling (what does excellence in the skill look like?).
5. Guide student practice.
6. Check students' understanding. Feedback, feedback, feedback.
7. Aim high (e.g. a student should be at 80% of the target to move on).
8. Scaffold difficult tasks (then progressively remove the scaffolding).
9. Independent practice (and learning for automaticity).
10. Weekly & monthly review (spaced repetition, retrieval practice, interleaving).

V. High-Impact Student-Focused Strategies (The Learner as the Evaluator, d>1.0)

The other category of "super factors" focuses on shifting agency and metacognitive control to the student. These interventions empower students to become evaluators of their own learning, a necessary complement to the teacher as an evaluator of instruction.[3]

A. Student Self-Reported Grades (d=1.33)

Student Self-Reported Grades, with an effect size of d=1.33, consistently ranks near the top of all influences.[4] This is arguably the most powerful mechanism that directly involves the student in their own acceleration.

Mechanism: Activating Student Expectations and Self-Efficacy

Hattie has suggested renaming this influence "Student Expectations" to better reflect its active mechanism.[17] The influence is not merely about students making predictions; it is about the teacher utilising that prediction as a baseline for challenging goal-setting. Students are often highly accurate in predicting their own performance, making their self-reported grade a clear indicator of their current learning expectation.[17]

The critical intervention occurs when the teacher takes this expectation and then deliberately pushes the learner to exceed it. This process makes the learning goal explicit and challenging, which evidence shows is a core requirement for visible teaching and learning.[3] When a student successfully performs at a level that surpasses their initial, internal prediction, they gain a powerful boost in confidence and self-efficacy—the belief in their own capacity to learn and achieve.[17]

Practical Implementation Guide

1. **Formal Pre-Assessment Goal Setting**: Before a new module or a major exam, students should formally write down the mark or grade they expect to achieve.
2. **The Challenge Conversation**: Teachers use this data point to engage the student in dialogue. This conversation should focus on defining the explicit learning intentions and success criteria required to achieve a target slightly higher than their prediction.[3] The focus is on the *process* required to achieve the elevated target, not simply the wish for a better grade.[17]
3. **Continuous Monitoring**: Throughout the learning process, the student should be encouraged to monitor their progress relative to their challenging goal, leveraging subsequent feedback for calibration.

B. Conceptual Change Programs (d=1.16)

Conceptual Change Programs, with an effect size of d=1.16, represents a critical instructional intervention focused on deep understanding and knowledge restructuring.[4]

Mechanism: Confronting and Restructuring Schema

These programs are specifically designed to address persistent student misconceptions—faulty mental models or naïve theories—that interfere with new, accurate learning. Particularly in subjects like science and mathematics, students often hold entrenched, inaccurate ideas about how the world works. If these initial schemas are not explicitly identified and challenged, they act as significant barriers, rendering subsequent instruction ineffective.[18] Conceptual change involves exposing the flaw in the current student schema, creating "cognitive conflict," and then providing the necessary instruction to help the student construct a new, accurate understanding.[5]

Practical Implementation Guide

1. **Eliciting Prior Knowledge and Misconceptions**: Begin by using diagnostic quizzes, reflective writing, or concept mapping to make students' prior, potentially inaccurate, schemas visible to both the student and the teacher.
2. **Design for Cognitive Conflict**: Structure learning activities, such as inquiry-based experiments or challenging problem sets, that demonstrably produce results contrary to the student's misconception. The task is to create a moment of genuine intellectual perplexity that forces the student to question their internal model.
3. **Constructing the New Model**: Provide explicit, clear instruction (Teacher Clarity, d=0.75) that offers a superior, scientifically accurate alternative. Follow this with multiple opportunities for the student to apply and elaborate on the new model in diverse contexts to ensure the correct concept is consolidated.[18]

It is worth investing time in planning to identify and predict misconceptions that may arise in the unit or lesson. Many subjects have databases of common misconceptions, their indicators and how to address them.

This is also a good opportunity for teachers to evaluate their own misconceptions (or out of date knowledge) that might affect students' learning.

VI. Instructional Strategies for Deep Learning and Mastery (d>0.70)

While Mindframes provide the necessary conditions, specific pedagogical techniques are required to directly accelerate achievement. The following instructional strategies demonstrate robust effect sizes well above the d threshold, indicating high effectiveness when implemented with fidelity.

A. Metacognitive Strategies and Self-Regulation (d \approx 0.75)

Metacognitive strategies refer to a student's ability to monitor, evaluate, and regulate their own thinking, commonly summarised as "learning how to learn".[19] This domain includes several highly effective influences: Transfer Strategies (d=0.86), Elaboration and Organisation (d=0.75), and Evaluation and Reflection (d=0.75).[2]

Mechanism: Fostering Student Autonomy and Cognitive Control

The success of these strategies stems from transferring the control of the learning process from the teacher to the student. When students are taught how to plan, monitor their engagement, select appropriate strategies, and reflect on their progress, they transition toward becoming their own teachers—a fundamental objective of Visible Learning.[3] High effect sizes for Transfer Strategies (d=0.86) and Elaboration (d=0.75) emphasize that deep learning is less about surface-level memorisation and more about actively organising information and applying (transferring) it flexibly to novel problems.[2]

Practical Implementation Guide

1. **Explicit Modeling of Thought Processes**: Teachers must model thinking aloud, verbalising the complex thought processes used to analyze problems, synthesise information, and make decisions. This makes the cognitive activity, which is typically hidden, explicit and visible to the student.[20]
2. **Structured Reflection Tools:** Incorporate structured reflective activities, such as "Assignment Wrappers," before or after major tasks. These prompts guide students to evaluate the study strategies they employed, determine which were effective, and reflect on how the task connects to broader course objectives.[21]
3. **Goal Setting and Self-Monitoring:** Teach students to set Specific, Measurable, Achievable, Realistic, and Timely (SMART) learning goals. Students should be actively involved in co-designing and using rubrics to monitor their progress, providing a framework for self-assessment.[20]

B. Reciprocal Teaching (d=0.74)

Reciprocal Teaching (d=0.74) is a method for **improving reading comprehension** that involves students and teachers sharing the role of instruction.[22]

Mechanism: Shared Comprehension Control and Distributed Expertise

It is effective because it explicitly teaches students four metacognitive strategies (Predicting, Clarifying, Questioning, and Summarising) and provides structured opportunities for practice and peer-mediated feedback.[23] This process ensures students actively engage with the text, continuously extending their understanding through critical dialogue and shared cognitive load.[23]

Practical Implementation Guide

Effective implementation requires explicit instruction of the four core strategies and structured group dynamics.[24]

1. **Teach the Four Roles:**
    - **Predicting**: Students forecast the content or outcome based on cues and prior knowledge.[24]
    - **Clarifying**: Students identify and resolve confusing elements, unclear vocabulary, or ambiguous statements in the text.[24]
    - **Questioning**: Students generate various levels of questions about the content, ranging from "Right-There" (literal) to "Between-the-Lines" (inferential) and "Critical Thought" (opinion/evaluation).[22]
    - **Summarising**: Students articulate the main ideas of the text selection in their own words.[24]
2. **Structured Group Rotation**: Divide the assigned text into small, manageable chunks. Organise students into mixed-ability small groups, and designate a rotating student "teacher" (or leader) for each segment. This leader guides the group through the four strategies, ensuring all members are practicing and discussing the text.[22] The teacher's role is to monitor implementation fidelity, provide initial modeling, and offer feedback.

Excellent examples of reciprocal teaching techniques that go beyond reading comprehension can be found in the **Routines** of Project Zero's **Creating Cultures of Thinking** (CoT) and **Making Thinking Visible** (MTV). In all cases, careful attention to roles, goals and ensuring deep student thinking and interaction are essential. https://pz.harvard.edu/thinking-routines

C. The Critical Importance of Feedback (d=0.92)

Feedback is one of the most important roles of a teacher, yet approaches are highly variable in their impact on the actual learning of students. Hattie recognises that early versions of Visible Learning "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" (VL:TS, p7). Students must know "*where am I going?*", "*how am I going?*" and, "*where to next?*".

Mechanism: Ensuring High-Qualty Feedback is Acted Upon

Feedback is only useful if students use it. Teachers may spend many hours on writing comments and marking work, yet this may have little impact on student learning if not managed effectively. Effective feedback must therefore be: timely (ready to use), targeted (with specific guidance for improvement), clear, actionable and owned by the student. Associating grades with feedback "ends the learning": students will not engage with the feedback once the "judgement" has been made. Therefore, feedback as an active, collaborative process should be separated from grading. When students know where they need feedback, actively seek and engage with feedback and apply it immediately in improving their work, their learning will grow.

Practical Implementation Guide

Effective feedback can be enhanced through strategies that might be more efficient in energy and time than traditional approaches to "marking":

1. **Separate grades from feedback**. Ensure students engage with feedback before any "judgement" is assigned to the learner.
2. **Ensure students own the feedback**. For example seeking feedback on targeted sections of their work, rather than covering their work in a sea of comments.
3. **Empower students with self- and peer-evaluation and feedback**. Give feedback on the feedback, to build targeted skills on evaluation and metacognition. Strategies like Trio Feedback might help.
4. **Make ongoing verbal, written and interactive feedback visible**. It's OK to explicitly say "here is some feedback, what are you going to do with it?".
5. **Try Four Levels of Feedback** (Hattie & Timperley 2007), breaking feedback into Task, Process, Self-Regulation and "Feed-forwards". Example here.
6. **Make feedback a routine part of classroom discussions** (d=0.82). High-engagement with feedback, errors, clarifications and justifications strengthens students' thinking.
7. **Get feedback on your feedback.** Is it timely, actionable, clear and helpful?

High-impact feedback fundamentally shifts the role of teacher from provider of knowledge to active co-participant in students' learning.

D. Subject Matter and Teacher Knowledge (The Clarity Factor)

The evidence base presents an interesting paradox regarding teacher attributes. While highly effective factors like Teacher Clarity (d=0.75) and Conceptual Change Programs (d=1.16) clearly require a mastery of content, the effect size for Teacher Subject Matter Knowledge alone has historically been reported as surprisingly low (d \approx 0.09).[27]

This finding should not be interpreted as content knowledge being irrelevant. Instead, it directs professional focus toward **pedagogical content knowledge**. The volume of content knowledge a teacher possesses is less important than their ability to *make that knowledge accessible* and *visible* to students.[27]

The high impact of Teacher Clarity (d=0.75) confirms this refined understanding.[2] Clarity involves structuring lessons so students fully comprehend the learning intentions, the success criteria, and the steps required to achieve mastery. Professional development should thus emphasize not merely the accumulation of content, but the refinement of instructional strategies designed to articulate complex concepts clearly, anticipate common misconceptions (thereby feeding into conceptual change programs), and ensure that students know precisely "what to do and how to do it".[3]

So what can we do with this information? Basically, two things:

- Ensure you know your subject really well (and stay up to date on changing areas of knowledge), and...
- Ensure you are vigilant for misconceptions and clarity of communication.
    - Where can you plan for addressing student errors and misconceptions?
    - How do you know that what you are communicating is being correctly understood by learners?

E. Context is All: Moving Away from Checklist Thinking

It is clear from this work that high-impact teaching is agile, responsive and intentional. All approaches to education are built on carefully selected strategies that are just right, just in time and evaluated for impact.

The table on the next page, adapted from resources shared by Hattie, give an illustration of how different methods might be combined at the surface, deep and transfer levels of learning.

F. Surface, Deep, Transfer? Many ways to achieve high quality learning.

Instructional Approach	Method (Effect size 2023)	Surface	Deep	Transfer
Direct/Explicit Instruction	Direct Instruction (d=0.56)	■		
	Worked Examples (d=0.47)	■		
	Teacher Clarity (d=0.85)	■	■	■
	Lecture (d= -0.26)	■		
	Demonstration (d=1.65)	■		
Inquiry	Guided Inquiry (d=0.49)		■	■
	Problem-Based Learning (d=0.53)			■
	Project-Based Learning (d=0.78)			■
	Discovery (open) Inquiry (d=0.27)			
Collaborative Learning	Cooperative Learning (d=0.55)			
	Jigsaw Methods (d=0.92)	■	■	■
	Reciprocal Teaching (d=0.74)	■	■	■
	Socratic Seminars (d=0.58)		■	■
	Think-Pair-Share	■	■	■
Constructivist	Flipped Classroom (d=0.58)	■	■	■
	Scaffolding (d=0.52)	■	■	■
	Concept Mapping (d=0.66)	■	■	■
Differentiation	Response to Intervention (RTI) (d=0.73)	■	■	■
	Differentiated Instruction (d=xx)	■		
	Individualised Instruction (d=xx)			
Metacognitive & Reflective	Self-Regulation Strategies (d=0.52)		■	■
	Goal-Setting (writing strategies (d=1.20)	■	■	■
	Metacognitive Strategies (0.58)	■	■	■
	Feedback (d=0.5-0.92)	■	■	■
Experiential Learning	Simulation & Gaming (d=0.41-0.53)		■	■
	Outdoor/Adventure Learning (d=0.49)		■	■
	Field Trips/Experiential Learning		■	■

Adapted from resources shared by John Hattie. **See appendix IV**

VII. Summary Tool: High-Impact Strategies for Teacher Application (HITS Matrix)

The following matrix synthesises the highest-leverage, actionable strategies derived from the recent Visible Learning MetaX synthesis. These influences represent the core pedagogical and cultural changes that educational leaders should prioritise to achieve accelerated student growth (d>0.70).

Actionable High-Impact Teaching Strategies (HITS) from Visible Learning MetaX (2024 Focus)

Strategy (HITS)	Effect Size (d)	Mechanism of Impact (Why It Matters)	Effective Implementation in the Classroom (How to Make it Work)
Collective Teacher Efficacy (CTE)	1.57	Systemic culture: Establishes a shared, powerful belief that teachers, working together, are the primary cause of student learning, leading to increased professional persistence and high fidelity implementation of instruction.	Facilitate protected, frequent collaboration time focused on analyzing student outcome data. Require reflection on how collective teacher actions contributed to success. Build high trust among staff.
Student Self-Reported Grades (Expectations)	1.33	Student agency: Identifies a student's current expectations and leverages this baseline to set a visible, challenging goal that pushes the student beyond their self-concept, thereby boosting self-efficacy.	Implement pre-assessment tasks where students predict their expected performance. Use this prediction as a starting point for discussions to set slightly higher, yet achievable, targets (challenging learning intentions).
Conceptual Change Programs	1.16	Cognitive restructuring: Programs explicitly designed to identify, challenge, and resolve deeply held student misconceptions. Essential for subjects like science and mathematics where foundational errors compound over time.	Employ diagnostic tasks to elicit misconceptions. Create activities that generate cognitive conflict (disconfirmation). Follow with explicit instruction and opportunities to apply the new, accurate conceptual model.
Transfer Strategies (Generalisation)	0.86	Deep learning: Focuses on the student's ability to apply knowledge and skills learned in a specific setting to novel,	Design tasks that require synthesis across different units or application to real-world, non-standard problems.

		unfamiliar contexts, indicating conceptual mastery rather than rote memorisation.	Explicitly teach students *when* and *why* to use specific strategies (conditional knowledge).
Deliberate Practice	0.79	Mastery and precision: Structured, focused rehearsal of skills or concepts aimed specifically at closing a known performance gap, requiring targeted, immediate, and high-quality feedback.	Implement dedicated practice sessions that concentrate on challenging areas identified through assessment. Ensure practice is purposeful, demanding high effort, and guided by clear criteria for successful execution.
Teacher Clarity	0.75	Instructional quality: Ensures that learning intentions, lesson structures, and assessment criteria are organized and communicated in a highly intelligible manner, enabling students to understand precisely "what to do and how to do it."	Systematically articulate success criteria alongside learning intentions at the start of every lesson. Use clear scaffolds, organizers, and model effective work. Routinely check for comprehension (visible learning).
Metacognitive Strategies (Self-Regulation)	0.75	Agency and reflection: Explicitly teaches students the skills necessary for planning, monitoring, and evaluating their own learning processes, fostering independence and self-directed learning.	Model thinking through "think-alouds" when solving problems. Integrate "Assignment Wrappers" that require students to evaluate the effectiveness of their study methods and planning.
Reciprocal Teaching	0.74	Comprehension and collaboration: A structured reading comprehension strategy involving students rotating four metacognitive roles (Summarizing, Questioning, Clarifying, Predicting), leading to deeper comprehension through shared discussion.	Model all four roles explicitly. Divide students into mixed-ability small groups, assigning and rotating the four roles across structured chunks of text, and providing feedback on the *use* of the strategies.

VIII. Conclusion: The Teacher as the Visible Learner

This synthesis of the Visible Learning research, updated through the MetaX database and *The Sequel* (2023), identifies many high-impact factors for accelerating student achievement. The data reveals that the primary determinants of impact are not isolated curricular programs or physical resources, but the Mindframes and professional expertise of the educators themselves.[16]

The highest-leverage strategies demand a cultural transformation toward Collective Teacher Efficacy (d=1.57), ensuring that instructional efforts are sustained by a shared conviction in their efficacy.[14] This must be coupled with rigorous Teacher Estimates of Achievement (d=1.62), which compels teachers to become accurate evaluators of their own effects, constantly calibrating instruction based on dependable evidence.[12]

Instructionally, acceleration is achieved when the student becomes an active participant in their own learning through self-regulation and goal-setting. Strategies such as Student Self-Reported Grades (d=1.33) and Metacognitive Strategies (d \approx 0.75) empower students to set challenging goals, monitor their progress, and take ownership of their success.[17]

Ultimately, the findings reinforce Hattie's core philosophy: **educational success hinges upon Visible Teaching and Visible Learning**.[3] The strategic priority for schools is not to blindly implement every factor above d, but to focus intensely on implementing the "Super Factors" (d>1.0) with fidelity, thereby establishing the necessary collective belief and evaluative mindset that will amplify the effectiveness of all subsequent high-impact instructional strategies (d>0.70).[3] This evidence-based prioritisation ensures that professional development and instructional reform are directly channeled toward the practices most likely to deliver demonstrable, accelerated student progress.

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Appendices

Appendix I: Visible Learning vs Making Thinking Visible

Summary of alignment between Hattie's Visible Learning (impacts) and Project Zero's (Ritchhart and Church) Cultures of Thinking (CoT) and Making Thinking Visible (MTV).

Hattie's Mindframes for Teachers	Ritchhart's Mindsets for Teachers
From Visible Learning: The Sequel **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.	**From Cultures of Thinking in Action** 1. For classrooms to be cultures of thinking for students, schools must be cultures of thinking for teachers. 2. We can't teach dispositions, we must enculturate them. 3. To create a new story of learning we must change the role of the student and the teacher. 4. Students learn best when they feel known, valued, and respected by both the adults in the school and their peers. 5. Learning is a consequence of thinking. 6. Learning and thinking are as much a collective enterprise as they are an individual endeavour. 7. Learning occurs at the point of challenge. 8. Questions drive thinking and learning. 9. Powerful learning both engages and empowers learners. 10. We make thinking and learning visible to demystify, inform and illuminate these processes.

Appendix II: Aligning CoT Cultural Forces with Hattie's High-Impact Strategies

Cultures of Thinking (Ritchhart)	CoT/MTV Purpose and Mechanism	Visible Learning (Hattie) Examples (there are more)	Effect Size (d)	Conceptual and Practical Synergy
Expectations	Establishing that high-quality, complex thinking is the non-negotiable standard of the group, not just final answers.	**Student Self-Reported Grades** (Student Expectations)	1.33	CoT sets universally high cognitive expectations; Hattie's work confirms that leveraging and pushing beyond a student's current self-expectation is one of the greatest accelerators of achievement.
Language	Developing a shared, explicit vocabulary to describe, analyze, and refine cognitive moves and thinking processes.	**Metacognitive Strategies** (Self-Regulation, Elaboration, Evaluation)	0.75	MTV Routines introduce the precise language (e.g., *connect, challenge*) needed to talk about thinking, which is the foundation for students to effectively plan, monitor, and regulate their own learning.
Time	Protecting sufficient duration for deep processing, productive struggle, revision, and reflection, signaling that depth precedes speed.	**Evaluation and Reflection**	0.75	MTV Routines institutionalize pause points and reflection activities (e.g., *I Used to Think…*) to ensure students engage in the high-impact practice of evaluating and reflecting on their learning processes, which requires protected time.
Routines	Providing predictable, systematic frameworks (Thinking Routines) that make specific cognitive actions habitual and lower the load of complex tasks.	**Reciprocal Teaching**	0.74	Reciprocal Teaching is functionally a highly effective thinking routine (summarizing, clarifying, questioning, predicting). CoT establishes the mechanism for embedding and practicing such routines consistently across subjects.
Modeling	The teacher explicitly verbalizes and demonstrates the internal, messy process of expert thinking, error correction, and strategy selection. [4]	**Teacher Clarity**	0.75	Modeling thinking aloud is a core strategy for achieving Teacher Clarity, ensuring that students fully comprehend the intellectual *process* required to achieve success criteria, making both teaching and learning visible. [10]

Interactions	Structuring dialogue among students to be accountable, critical, and constructive, prioritizing shared reasoning and building on peers' ideas.	**Reciprocal Teaching / Classroom Discussion**	0.74 / 0.82	MTV structures (like *Connect, Extend, Challenge*) force the type of peer-to-peer accountability and dialogue that drives the strong effects observed in Reciprocal Teaching and high-quality classroom discussion.
Oppor-tunities	Designing learning tasks that necessitate the application, synthesis, and transfer of knowledge to novel, ambiguous contexts.	**Transfer Strategies**	0.86	CoT mandates that learning tasks move beyond surface recall. Hattie confirms that the ability to apply (transfer) knowledge is a powerful indicator of deep understanding and a highly effective instructional outcome.
Environment	The physical space documents and displays the ongoing thinking process, making intellectual history public and available for critique.	**Conceptual Change Programs**	1.16	Documenting thinking (e.g., on anchor charts or documentation panels) makes misconceptions visible to the group, which is the necessary first step for a Conceptual Change Program—exposing the flaw and building a new, accurate model.
Systemic Result: CoT as Org. Mindframe	A school-wide, shared belief that intentional culture design and process-focus will lead to rigorous student outcomes.	**Collective Teacher Efficacy (CTE)**	1.57	The observable, documented success generated by MTV routines (the "evidence of learning") across classrooms strengthens the collective professional belief that teachers can *jointly* influence student achievement, which is the definition of CTE.

Resources for Creating Cultures of Thinking: https://learn.wab.edu/faculty/attl/pz/

Appendix III: Visible Learning vs IB Approaches to Teaching & Assessment

Approaches to Teaching

Aligned IB Principle	High-Impact Strategy (Visible Learning)	Effect Size (d)
ATT 1: Inquiry, Action, and Reflection (0403-01)	**Collective Teacher Efficacy** (Shared belief in group impact)	**1.57**
	Student Self-Reported Grades (Activating student expectations)	**1.33**
	Critical Thinking	**0.84**
	Evaluation and Reflection (Self-monitoring and reviewing learning strategies)	**0.75**
	Reciprocal Teaching (Structured inquiry skills: Questioning, summarizing, clarifying, predicting)	**0.74**
ATT 2: Focus on Conceptual Understanding (0403-02)	**Conceptual Change Programs**	**1.16**
	Transfer Strategies (Applying knowledge to new contexts)	**0.86**
	Teacher Clarity (Ensuring goals/concepts are visible)	**0.75**
	Elaboration and Organization (Connecting new ideas to prior knowledge)	**0.75**

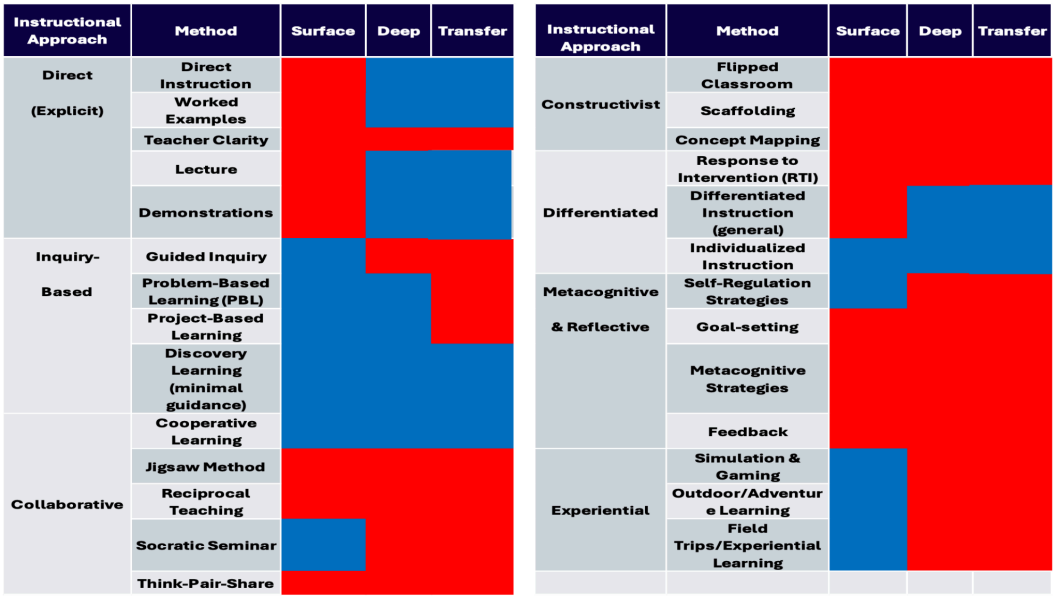
- The two most impactful strategies, Collective Teacher Efficacy (d=1.57) and Student Self-Reported Grades (d=1.33), relate to the collective belief in the power of teaching and the student's *own* belief in their capacity to learn (agency and reflection).
- Conceptual Change Programs (d=1.16) is the single most powerful strategy for achieving the IB's goal of Conceptual Understanding, as it actively confronts and restructures student misconceptions.

Approaches to Assessment

Aligned IB Principle	High-Impact Strategy (Visible Learning)	Effect Size (d)
AtoA 1: Use Feedback to Improve Learning (0404-01)	**Teacher Estimates of Achievement** (Teacher's diagnostic accuracy)	**1.62**
	Feedback (Overall Effect)	**0.72-0.73**
	Success Criteria (Clarity of learning outcomes)	**0.70**
	Setting standards for self-judgement (Making success criteria personal)	**0.62**
AtoA 2 & 4: Varied Assessment & Consolidate Learning (0404-02, 0404-04)	**Student Self-Reported Grades** (Activating student expectations)	**1.33**
	Response to Intervention (RTI) (System for targeted assessment and action)	**1.07**
	Scaffolding	**0.82**
	Deliberate Practice (Structured repetition guided by assessment)	**0.79**
	Self-Verbalization / Self-Questioning (Student self-monitoring during work)	**0.67**
	Working Memory Strength (Focusing on necessary foundational skills for complex tasks)	**0.57**

- The strategy with the highest reported effect size across the entire table is Teacher Estimates of Achievement (d=1.62). This highlights the critical role of the teacher's diagnostic accuracy—knowing where a student is, where they need to go, and the most effective way to close that gap.
- The alignment emphasizes the cyclical nature of assessment: systems for targeted action (RTI, d=1.07) are combined with concrete instructional moves (Scaffolding, d=0.82) and student self-regulation (Self-Verbalization, d=0.67) to consolidate learning.

Appendix IV: Surface, Deep or Transfer? Source Images



Instructional Approach	Method	Surface	Deep	Transfer
Direct (Explicit)	Direct Instruction			
	Worked Examples			
	Teacher Clarity			
	Lecture			
	Demonstrations			
Inquiry-Based	Guided Inquiry			
	Problem-Based Learning (PBL)			
	Project-Based Learning			
	Discovery Learning (minimal guidance)			
Collaborative	Cooperative Learning			
	Jigsaw Method			
	Reciprocal Teaching			
	Socratic Seminar			
	Think-Pair-Share			

Instructional Approach	Method	Surface	Deep	Transfer
Constructivist	Flipped Classroom			
	Scaffolding			
	Concept Mapping			
Differentiated	Response to Intervention (RTI)			
	Differentiated Instruction (general)			
	Individualized Instruction			
Metacognitive & Reflective	Self-Regulation Strategies			
	Goal-setting			
	Metacognitive Strategies			
	Feedback			
Experiential	Simulation & Gaming			
	Outdoor/Adventure Learning			
	Field Trips/Experiential Learning			

Shared by John Hattie in New Metrics for International Schools call, Jan 9 2026.

High Impact Approaches at Each Phase of Learning					
Surface Learning		Deep Learning		Transfer Learning	
Strategy	E.S.	Strategy	E.S.	Strategy	E.S.
Direct Instruction	0.59	Class Discussion	0.82	Cooperative Learning	0.40
Manipulatives	0.30	Imagery	0.51	Identifying similarities and differences	1.32
Mnemonics	0.80	Concept Mapping	0.64	Metacognitive strategies	0.55
Note-taking	0.51	Elaboration and Organization	0.75	Organizing conceptual knowledge	0.85
Spaced Practice	0.65	Questioning	0.48	Peer Tutoring	0.51
Strategy to integrate with prior knowledge	0.93	Reciprocal Teaching	0.74	Problem solving teaching	0.67
Summarizing	0.74	Self-Questioning	0.59	Self-efficacy	0.71
Vocabulary programs	0.63	Study Skills	0.45	Transfer strategies	0.86

From the “Teaching Mathematics in the Visible Learning Classroom” series.