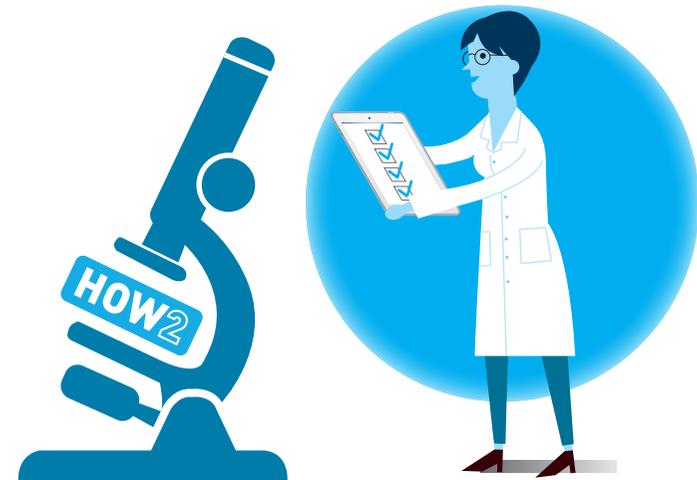# Built On Evidence

The provenance of the HOW2s is firmly evidence-based. But that is not enough. Such is the gap between the researcher and the teacher, that transformational design is needed to make the evidence classroom-ready.

Most educational research is expressed in a way that is not immediately accessible by teachers."

① 1

— HOPKINS, D., 2013, EXPLODING THE MYTHS OF SCHOOL REFORM, MCGRAW HILL

Making Evidence Work

Educational research investigates what works best in classrooms. It doesn't direct its gaze at itself however. As it stands today, evidence doesn't work. It fails to communicate its findings in ways that can be easily accesssed, understood and implemented by teachers.

HOW2s bridge this gap between the researcher and the classroom. They're designed to bring evidence into teachers' everyday practice and are built upon multiple sources of evidence on how best to accomplish this.

"Reforms that expose teachers to best practices through workshops or written materials but that do so without making this knowledge precise enough for teachers to understand how to apply it in their own classrooms also fail."

— BARBER, M. & MOURSHED. M, 2007, HOW THE WORLD'S BEST PERFORMING SCHOOL SYSTEMS COME OUT ON TOP, MCKINSEY & CO.

The Provenance

HOW2s are based firmly on the meta-analyses that, over the past fifteen years, have promised to revolutionise education.

MARZANO AND HATTIE

The moment Robert Marzano bought out his 2001 book *Classroom Instruction That Works*, the march towards an evidence-based education began. Not that many noticed. But by the time of John Hattie's book *Visible Learning* in 2009, the education world seemed ready to listen.

Both offer ranking lists of what works best in classrooms which allow teachers to pursue teaching methods without the fear of discovering further down the road that they were merely fads. As was the case with learning styles, multiple intelligences and, sadly, so many more seemingly promising approaches.

HOW2s were developed from this secure body of knowledge. Their origins can be traced directly back to the ranking lists of strategies that have proven to be consistently successful over several decades.

AUTHORS AND TEACHERS

Teacher authors have been writing practical books for teachers over many decades. Since Marzano and Hattie, they have been able to do so based on solid, global evidence.

Geoff Petty has been the premier British example, translating research into practical classroom guidance for teachers' use. There are now many others.

And, of course, teachers are continuously inventing their own ever more effective and engaging classroom methods. By one means or another, these approaches often end up being written up in others' books.

HOW2s were also drawn from this rich source of ideas. What the meta-studies provide is a ready reference with which to discriminate the proven from the merely promising, establishing the credentials of our selected techniques.

FILLING IN THE GAPS

However significant the advent of the meta-studies, they provide neither a comprehensive nor detailed blueprint for teacher development. As David Hopkins remarked, John Hattie's book, *"... is still a compendium, though, not a theory of action."* And as Geoff Petty said (personal communication), the evidence with its comparisons of strategies, only provides a direction, not classroom practice guidelines.

There is much left to interpret, translate and create. This has been the challenge facing the HOW2s. How to turn global evidence based on generalised notions of strategies, into precise techniques teachers can follow and personalise to their local contexts?

Make no mistake, global data needs transforming into classroom-ready techniques ready for teachers' everyday adoption, adaption and application.

"It is important to make the distinction between strategies of classroom formative assessment on the one hand and the techniques that can be used to enact these strategies in classrooms on the other."

— WILIAM, D & LEAHY, S., 2011, SUSTAINING FORMATIVE ASSESSMENT WITH TEACHER LEARNING COMMUNITIES, DYLAN LEARNING CENTER

3

Behind the Numbers

Evidence on its own — unmediated — is no panacea. The numbers of the studies synthesised and the precision of the calculations can enchant us into thinking otherwise.
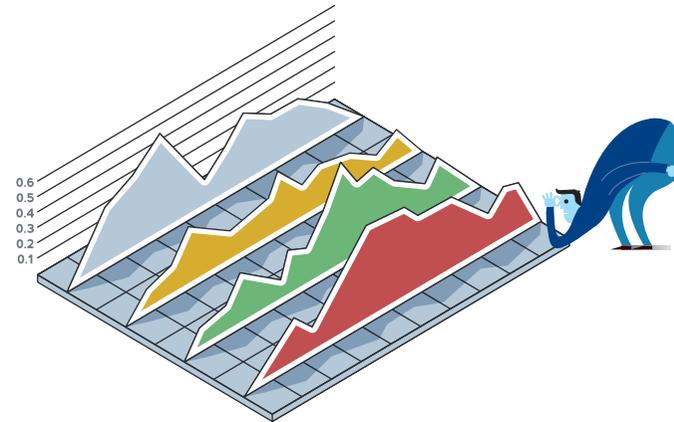
LACK OF PRECISION

For the most part, research findings in education take the form of generalisations. And yet their effect sizes are presented with great accuracy. Hattie's list of top strategies, for example, is specified down to two decimal places.

This level of precision is at odds with the lack of identification of the methods themselves.

Take Assessement for Learning. This approach is a catch-all for very many specific techniques. But we do not know which ones were the subject of the research or how they were executed. Nor do we know how many different methods are grouped together under the one concept.

Such vagueness does not help teachers learn new techniques. Statistical precision must not be confused with pedagogical precision. They're quite different.

NOT IMPLEMENTABLE

With the breakthrough of the global meta-studies, it was tempting to assume that education would become evidence-based almost overnight — just like medicine against which its practices are often compared.

It took a while to realise that the evidence provided was a particular type of knowledge. It was declarative in nature: a knowing *that* (such and such a strategy was highly effective).This type of knowledge is fine for academics, authors and policy makers but seriously inadequate for teachers.

Teachers are desperate for procedural knowledge — a knowing *how* (such and such a technique actually works, step by step). Until the declarative knowledge of the meta-studies is translated into practical procedural knowledge, the march towards an evidence-based profession will remain a mere shuffle.

NO GUARANTEE

When world-leading researcher, Helen Timperley, asserts that *"The contextualised nature of teaching… means there can be no guarantee that any specific teaching approach will have the anticipated effect"*, we should be wary of assuming that the new wave of evidence is both classroom-ready and enforceable.

Added to which, Dylan Wiliam warns us that, *"Teachers have to be professionals, deciding for themselves whether the research is applicable in this particular context with my particular students in the context of what I'm teaching them."*

This leaves teachers firmly in the driving seat. It is they who have to test out the global evidence in their own local contexts. That process will invariably entail a great deal of skillful adaptation — the very attribute John Hattie identifies as the key to expert teaching.
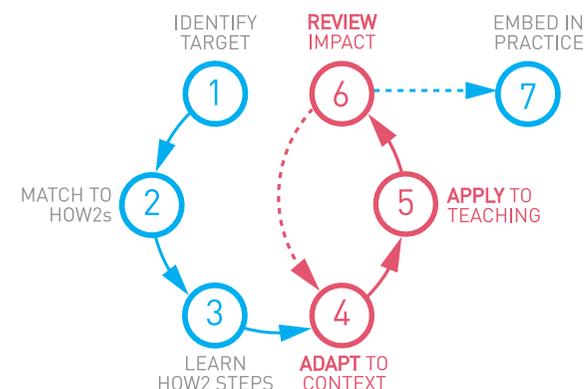
"Because they are derived from research evidence, these techniques form a set of 'validated practices' that may not work in every setting but are likely to work in most contexts."

4

— WILIAM, D & LEAHY, S., 2011, SUSTAINING FORMATIVE ASSESSMENT WITH TEACHER LEARNING COMMUNITIES, DYLAN LEARNING CENTER

Designed for Action

The design of the HOW2s was both informed by the evidence and directed to its shortcomings. Ranking lists were transformed into classroom-ready visual guides.

IDENTIFY TARGET
REVIEW IMPACT
EMBED IN PRACTICE

(1) (6) (7)

MATCH TO HOW2s (2) (5) APPLY TO TEACHING

(3) (4)

LEARN HOW2 STEPS ADAPT TO CONTEXT

ADDING PRECISION

The first task was to turn the strategies into discrete and detailed techniques. Strategies, you'll remember, are titles of a general approach to teaching, not the specific techniques they represent.

We rummaged our large repertoire of techniques picked up from working with over 2,000 schools over a 15 year spell, as well as from our own teaching over several decades. To this mix, we added ideas gleaned from a large library of teaching books.

We tested the credibility of each technique against the principles of its associated strategy. And then got to work in defining exactly how it was executed. That meant understanding, precisely, what the teacher thought, did and said, followed by the actions of the students. Each step was captured in this process and tested for clarity, precision and understanding.

VISUALISING THE STEPS

Once having established the exact steps that make up the selected techniques, we needed to represent them in the clearest way, with no chance of misinterpretation.

A visual format seemed the obvious choice. Since Allan Paivio's 1971 studies on dual encoding, we have known that we can take in more information, more clearly and with less overload, if we use a combination of words and images. Images trump words for clarity and ease of use. But used alongside words, they are more powerful still.

By deciding to cut out the background classroom context, we worked to the figure-ground principles of Gestalt psychology. In this way, the teacher and her students were clearly identifiable. And by creating three optional visual formats, the teacher is provided with an unprecedented choice of viewing.

PERSONALISING TO CLASSROOMS

According to John Hattie adaptive experts *"have high levels of flexibility that allow them to innovate when routines are not enough"*. And as there is no guarantee that any evidence-based technique will work in all classrooms, this ability to adapt is crucially important.

For that reason, the HOW2 Process was designed with this function in mind. You can see in the model above, the iterative loop *Adapt > Apply > Review*. By designing in this skill, the framework shapes teacher thinking and behaviour. Adaptive expertise is built in.

This framework is used throughout the HOW2 app to structure all professional learning activities. It establishes and characterises the reflective teacher.

Guidelines for the adaptive process provide the cues and questions to focus and shape teacher planning and reflection.
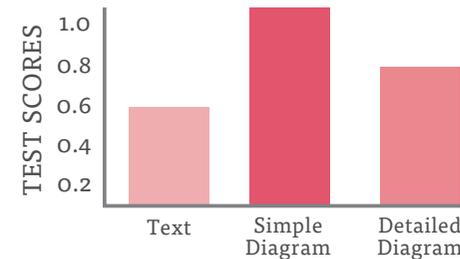
"When learning something new, we are all visual learners."

— CLARK, R., 2011, EVIDENCE-BASED TRAINING METHODS, ASTD

5

The Visual Advantage

We are all visual beings whatever bogus learning style inventories might suggest. And we perform more effectively when visuals are used to explain new skills.

TEST SCORES

1.0
0.8
0.6
0.4
0.2

Text | Simple Diagram | Detailed Diagram

Butcher, K. R. (2006)

COGNITIVE SCIENCE

It is interesting to note that in his latest book (Hattie & Yates 2013), Hattie makes his first reference to Ruth Colvin Clark who in her book *Evidence-Based Training Methods* wrote that, *"Those of us in workforce learning are better positioned to embrace evidence-based practice than our colleagues in public education"*.

Cognitive science is, indeed, a very valuable source of evidence for educators. A parallel and counter point to the classroom-based researcy syntheses of Hattie and Marzano, it offers decades of replicated research, with clear conclusions for classrooms.

The basis for the visual nature of HOW2s is firmly rooted in this source of evidence. So much so that Ruth Clark has commended HOW2s for their visual guides. In this way, both the content and its communication are research-informed.

PICTURE SUPERIORITY EFFECT

Butcher's study, summarised above, is just one of very many that have repeatedly proven the superiority of images over text in terms of understanding and retrieval.

As long ago as 1923, philosopher Bertrand Russell pointed out that a diagram shows the relationships between its components in a direct and clear manner. Yet those self same relationships expressed in text through the mechanism of syntax, appear to be far more complex and unnecessarily difficult to grasp.

The significance of this is summed up by visual practitioner, David Sibbert, when he said, *"Visual work focuses a group, because everyone is looking at one display, not the very many different versions inside their own imaginations"*. Establishing this shared understanding of teaching techniques is crucial for successful CPD.

STILL VERSUS MOVING IMAGES

So why not use live observations and video? Because, suprisingly, video does not offer to everybody the clarity of information it promises. John Bransford in his report to the American National Research Council writes about video studies where *"The expert teacher had very different understandings of the event they were watching than did the novice teachers"*.

Why should this be so? Experts are not distracted by low Signal to Noise ratios —background detail that obscures perception (of the signal). Which is why HOW2s eliminate all unnecessary detail in its visuals.

In direct comparisons between still and moving images, Ruth Colvin Clark notes that *"When teaching how things work...still visuals [are] better than anima-tions... because animation overloads our brains"*. HOW2s are simple, static and can be reviewed at your own

"A theory of action connects the actions of teachers with the consequences of their behaviours — the learning and achievements of their students."

— HOPKINS, D., 2013, EXPLODING THE MYTHS OF SCHOOL REFORM, MCGRAW HILL

Student Learning

Meta-studies assign effect sizes to strategies but, until now, there's been no direct link between specific teaching techniques and student learning.

IF... THEN... CHECK

The Theory of Action sequence can be easily mapped onto the HOW2 Process
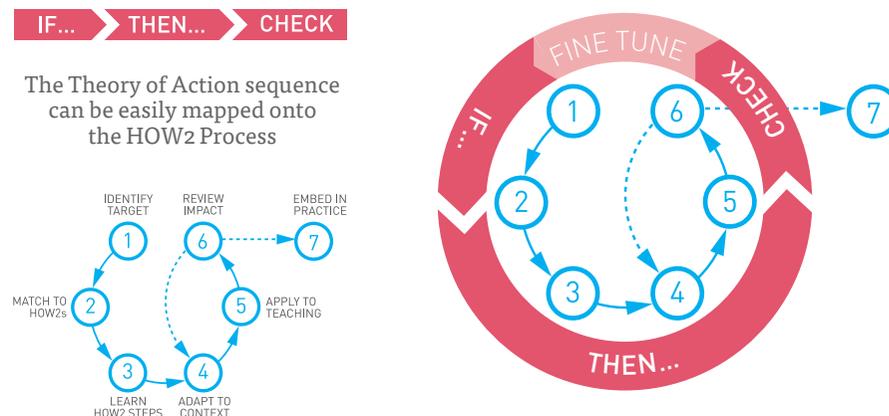
ESTABLISHING THE PURPOSE

Helen Timperley gets straight to the point when she writes that *"Improvements in student learning … are not a by-product of professional learning but rather its central purpose."* And, quite obviously, the sole purpose of teaching.

Then why no explicit causal links between the intent of teaching and student learning outcomes? There may well be plenty of talk about learning — the partners, walls and walks — but that lacks the needed precision for teachers to plan for specific learning process outcomes.

Every HOW2 technique has its own learning statement, outlining in detail what the student will do and how the build up of skills leads to its end goal.

TEACHERS' THEORIES OF ACTION

A theory of action might have an academic-sounding ring to it but, make no mistake, is a highly practical tool for rational and reflective teaching.

It makes explicit a teacher's decision-making, being
• Based on statements of causal relationship (if/then)
• Empirically falsifiable based on evidence gathered
• Open ended and iterative in nature.
With the learning statements of the HOW2s, teachers have the information about student learning to plan with real intent. And to test, not their students' abilities but, rather, the effectiveness of their teaching.

The HOW2 Process provides teachers with a theory of action model that is integrated into all aspects of the HOW2 app. With its guiding questions and simple steps it becomes an everyday framework for teaching, coaching and observational feedback.

STUDENTS' METACOGNITION

Alongside the subject content objectives clarified at the start of a lesson, teachers can now provide process objectives in the form of the HOW2 learning statements.

From the outset, students can be clear about the learning skills they will be developing. The way the learning statements are written provide students with an understanding of how the skills develop —their very own rubric against which they can assess and regulate their own learning.

Such metacognitive habits are essential for deep learning and its transfer across subjects.This *double decker learning*, as Geoff Petty describes the dual focus of subject content and process, has a strong body of evidence behind it. Hattie (2009) says that *"it is necessary to combine the study skill with the content to have an effect on the deeper levels of understanding"*.
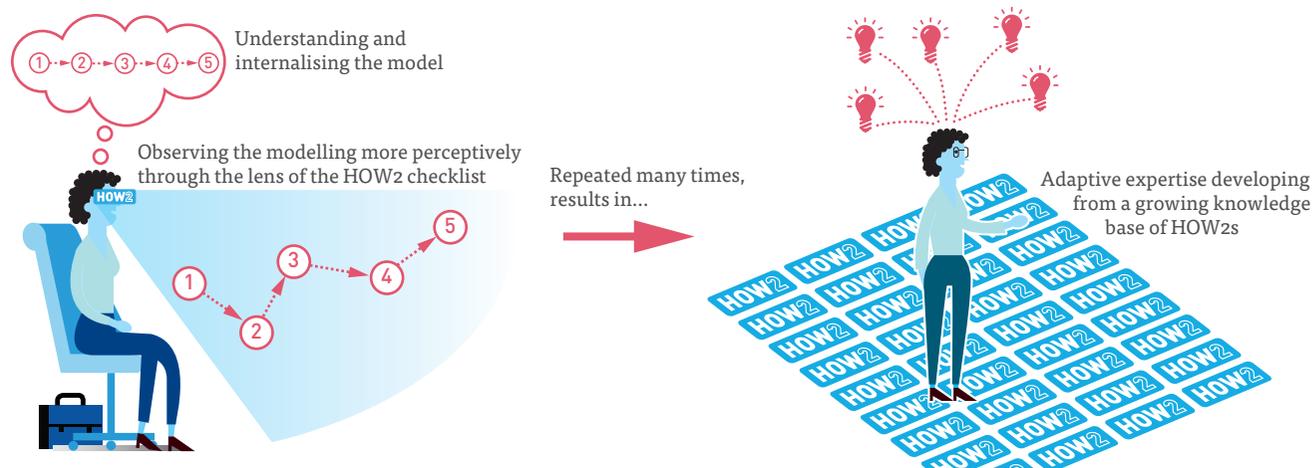
"One of the main reasons that educational research has had so little impact on educational practice is because the very hardest task of all — working out how to implement research findings into real contexts — has been left almost entirely to teachers, and this is both unfair and foolish."

7

— WILIAM, D & LEAHY, S., 2011, SUSTAINING FORMATIVE ASSESSMENT WITH TEACHER LEARNING COMMUNITIES, DYLAN LEARNING CENTER

Developing Practice

Progress can be accelerated by ditching some long-held beliefs, and adopting practices from other professions.

Understanding and internalising the model

Observing the modelling more perceptively through the lens of the HOW2 checklist

Repeated many times, results in...

Adaptive expertise developing from a growing knowledge base of HOW2s

MODELS BEHIND MODELLING

In his book *Practice Perfect*, Doug Lemov warns of the dangers of modelling. Without first *calling your shots*, there is a high probability that the observer will learn the wrong things.

This runs counter to our belief that simply by watching an excellent teacher, the observer will improve their own practice. A brilliantly simple solution that, unfortunately, happens not to be true.

John Bransford in his analysis, covered on page 5, of why this is so, explains that experts have *"the increased ability to segment their perceptual field (learning how to see)"*. In other words, they view the teacher through the framework of a model. Without the model, there is only imitation, at best.

HOW2s provide observing teachers with a model with which to learn more deeply from the modelling.

CHECKLISTS FOR PROFESSIONALS

Surely professionals are above mere checklists? Aren't they for technicians and other lower-order jobs? That's what surgeons first thought as they rebelled against their introduction into clinical practice.

Atul Gawande, surgeon and best-selling author has captured the eventual integration of checklists in the medical profession in his book *The Checklist Manifesto*. He reports how checklists elevate effectiveness both in medicine and a whole host of other professions.

Teaching is no different in its need for checklists. The HOW2s can be considered, in this context, as visual checklists — capturing the step-by-step details of models of teaching techniques.

If models help teachers observe, reflect and develop their practice, then checklists of these models secure an expanding and shared knowlege base among peers.

CREATIVITY THROUGH KNOWLEDGE

It has been a long-held belief that knowledge is the enemy of creativity. Not so.

Teacher author Daisy Christodoulou has written persuasively that rather than limiting creativity, knowledge is its very basis. Unless one can draw upon a wealth of knowledge from which to create new connections, imagination is impoverished.

The same is true for teachers. Models and their inherent checklists do not dumb down. HOW2s are not rigid templates to follow unthinkingly. Quite the opposite in fact.

With a growing knowledge base of HOW2s, teachers are better equipped to create personalised adaptations to suit their particular classroom contexts.
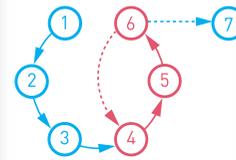
The HOW2 Process builds in this very adaptation stage. Its internal iterative loop of *Adapt > Apply > Review* guides teachers through the operation.

Personalising HOW2s
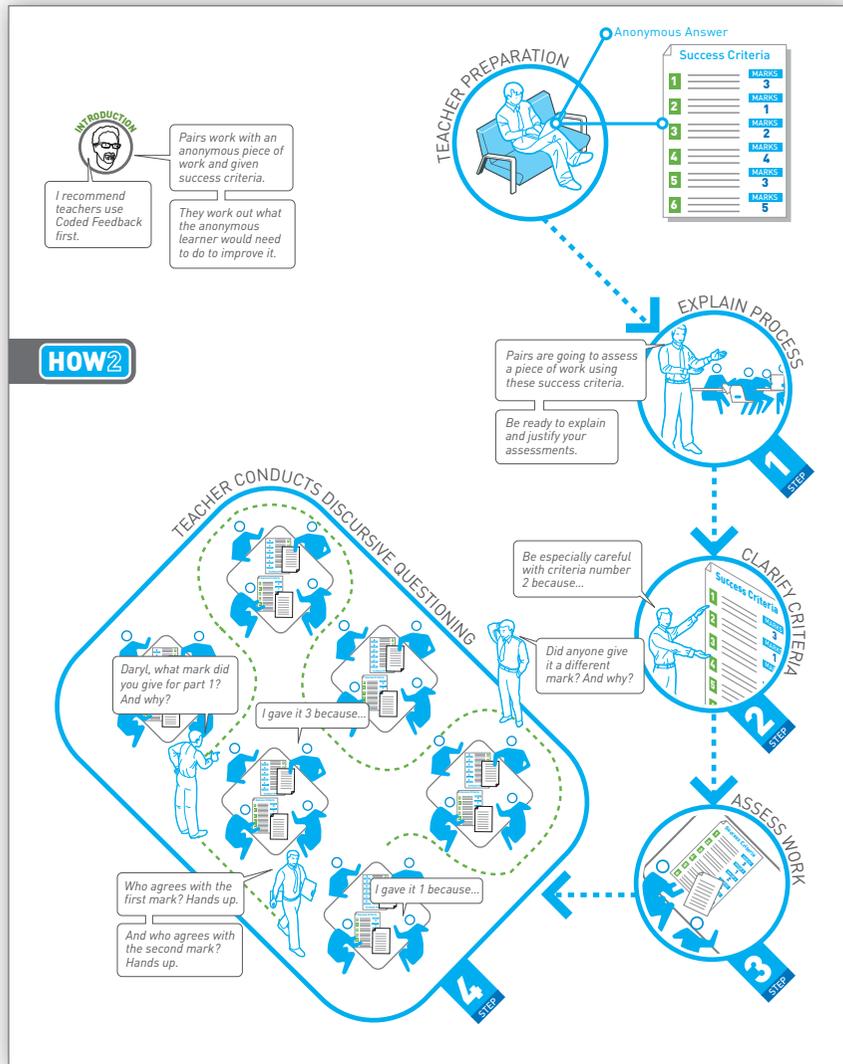

The original Anonymous Assessment HOW2

HOW2 PROCESS

EDYTA'S STORY

Edyta works at the College of Haringey, Enfield and North East London, where she teaches Job Centre Plus learners employability skills.

She used her creativity and large knowledge base to personalise the Anonymous Assessment HOW2 to suit her learners who had low literacy skills and a fear of a return to classrooms.

The iterative loop *Adapt > Apply > Review* (4>5>6) of the HOW2 Process guided the necessary fine-tuning stage.
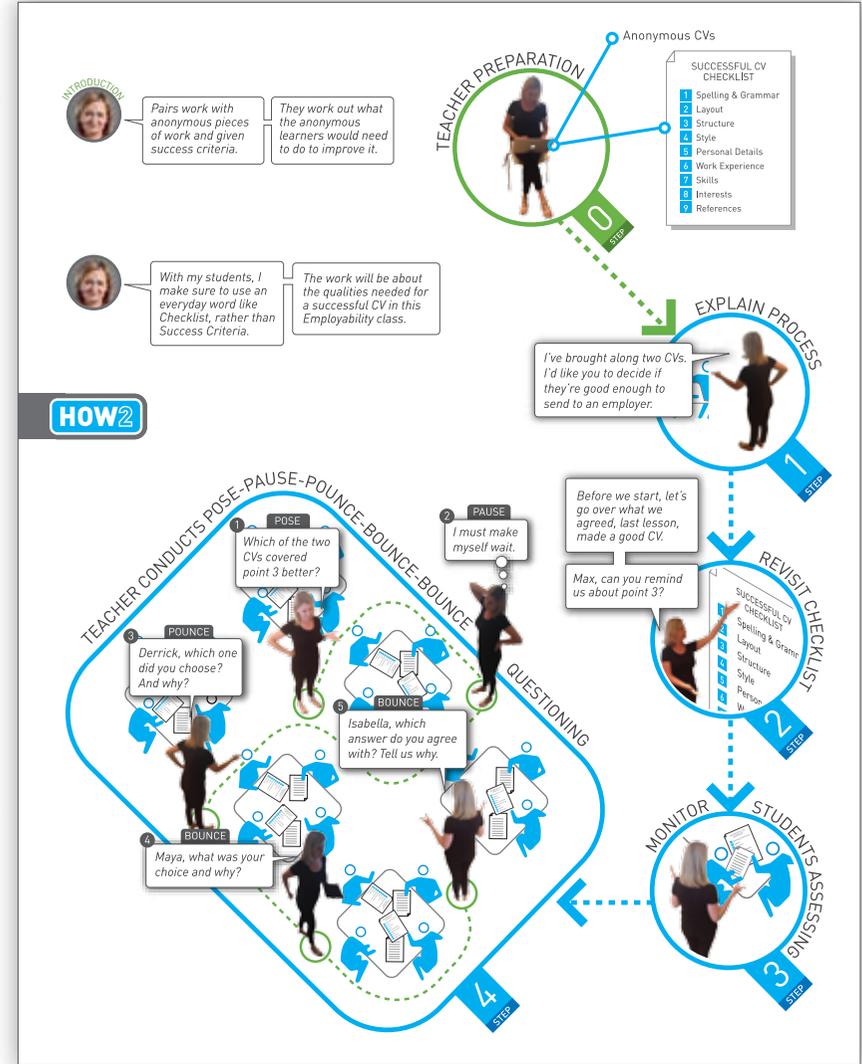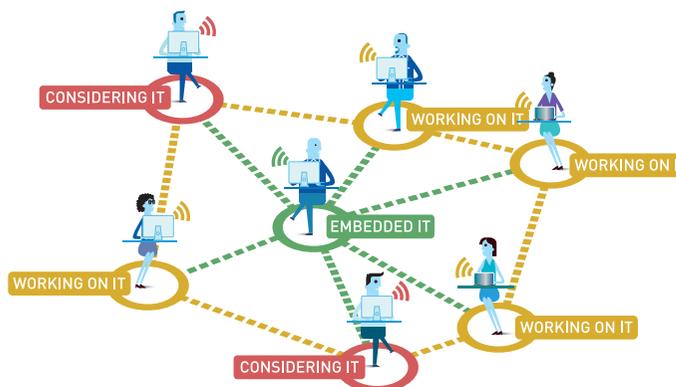

Edyta's personalised version

> *"Nothing has promised so much and has been so frustratingly wasteful as the thousands of workshops and conferences that led to no significant change in practice when teachers returned to their classrooms."*

— FULLAN, M., 1991, THE NEW MEANING OF EDUCATIONAL CHANGE, CASSELL

Sharing Best Practices

Teachers learning from each other instead of from visiting gurus was heralded as the next generation solution. That was over twenty years ago. What's happend since?

| Library | Skills Exchange | Nudges |

| **47** | **39** | **76** |
| CONSIDERING IT | WORKING ON IT | EMBEDDED IT |

Every HOW2 shows how many colleagues are at which of stage of learning the technique. Their names are listed, ready for the teacher to send whoever they choose a Nudge to start off a learning partnership.

LETHAL MUTATION

We have established that evidence handed down by researchers is insufficiently precise or procedural in nature to be considered as practice guidelines. And that teachers have to work at adapting them to fit their individual classroom contexts.

But when does this necessary adaptation become unhelpful morphing? When there is no platform of shared understanding of what exactly the techniques consists of by way of precise definitions.

Which is why Dylan Wiliam is frequently to be heard describing the *lethal mutation* of evidence-based techniques as they morph from teacher to teacher via their word-of-mouth explanations.

This serial communication based on an imprecise understanding remains a hallmark of teacher learning communities unfortunately.

THE SKILLS EXCHANGE

The Skills Exchange is a step change in how to share best practice. It runs with these six features.

Knowledge Capture: No more organisational goldfish-like lack of retention of what the best teachers do. The capture of best practice is cumulative (building over time), current (live sharing) and consensual (teachers decide to share).

Open Statuses: Teachers self-determine the status of their mastery of a HOW2 as a mark of their autonomy. Their transparency to colleagues provides both an invitation to connect and the peer accountability to respond reciprocally.
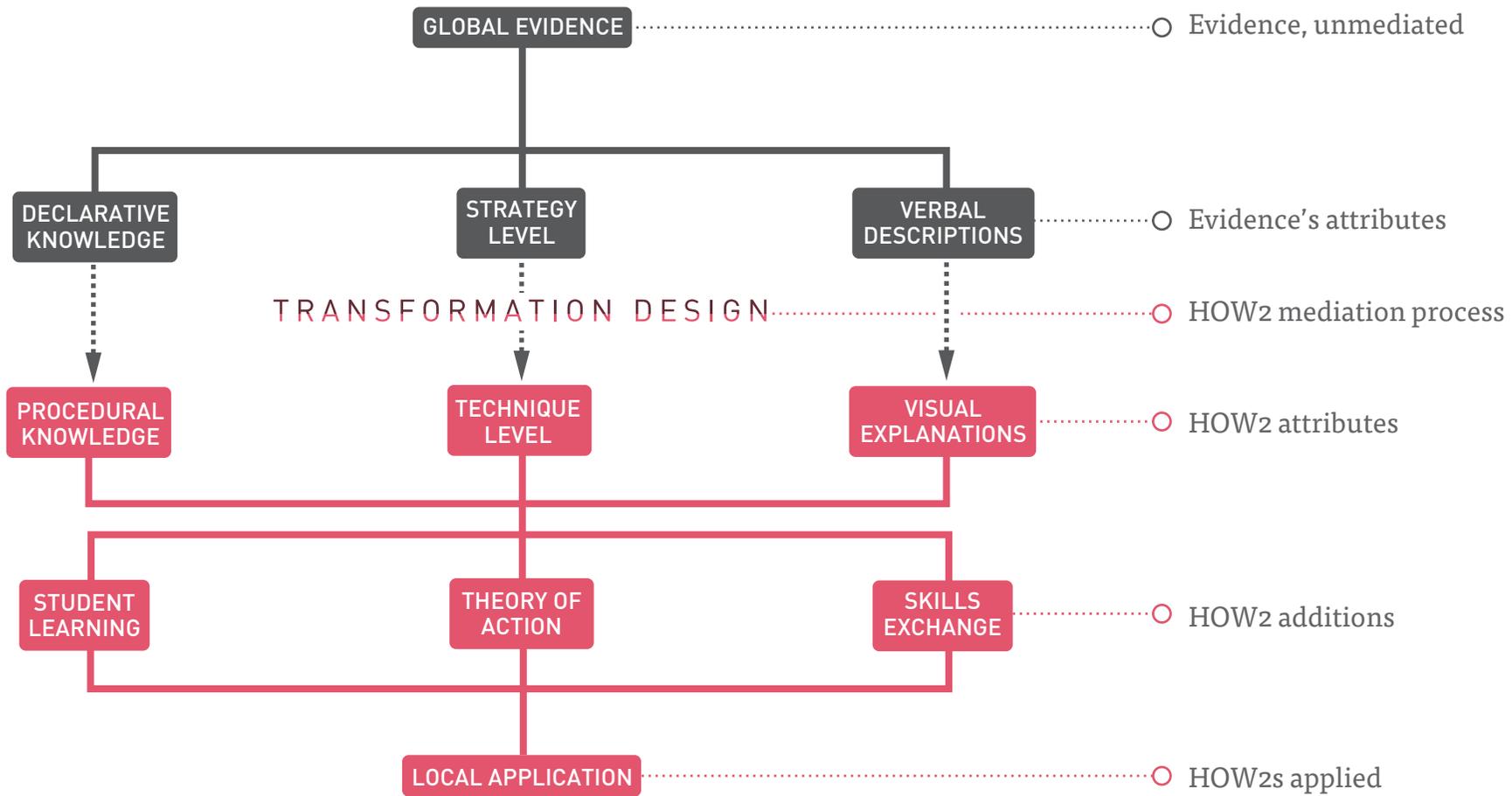
Lateral Network: This is no top-down, directed activity. It generates itself purely from a free exchange of ideas and skills, providing teachers with trusted and valued know-how from fellow teachers working in the same context.

Radial Hub: No lethal mutation from serial word of mouth. The central hub of HOW2s provide a shared understanding among teachers of how precisely the techniques work and from which they share their experiences radially, so to speak.

Shared Know-How: Teachers access, directly from peers, what they have found works best. And they learn how they adapted, and for what reasons, the HOW2s to best fit their classroom context. Powerful, valued and trusted know-how.

Data Capture: Being digital, and always open, everything is captured. The Skills Exchange gives managers an immediate and accurate picture of the state-of-play of teaching skills among the organisation. Available at a glance.

A Visual Summary

GLOBAL EVIDENCE	○ Evidence, unmediated
DECLARATIVE KNOWLEDGE · STRATEGY LEVEL · VERBAL DESCRIPTIONS	○ Evidence's attributes
TRANSFORMATION DESIGN	○ HOW2 mediation process
PROCEDURAL KNOWLEDGE · TECHNIQUE LEVEL · VISUAL EXPLANATIONS	○ HOW2 attributes
STUDENT LEARNING · THEORY OF ACTION · SKILLS EXCHANGE	○ HOW2 additions
LOCAL APPLICATION	○ HOW2s applied

"Make sure guidance is specific, actionable, and tells people what to do."

11

—LEMOV, D., 2012, PRACTICE PERFECT, JOSSEY-BASS

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