CURIOSITY AND
POWERFUL LEARNING

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DAVID HOPKINS AND WAYNE CRAIG WITH OLI KNIGHT

McREL INTERNATIONAL

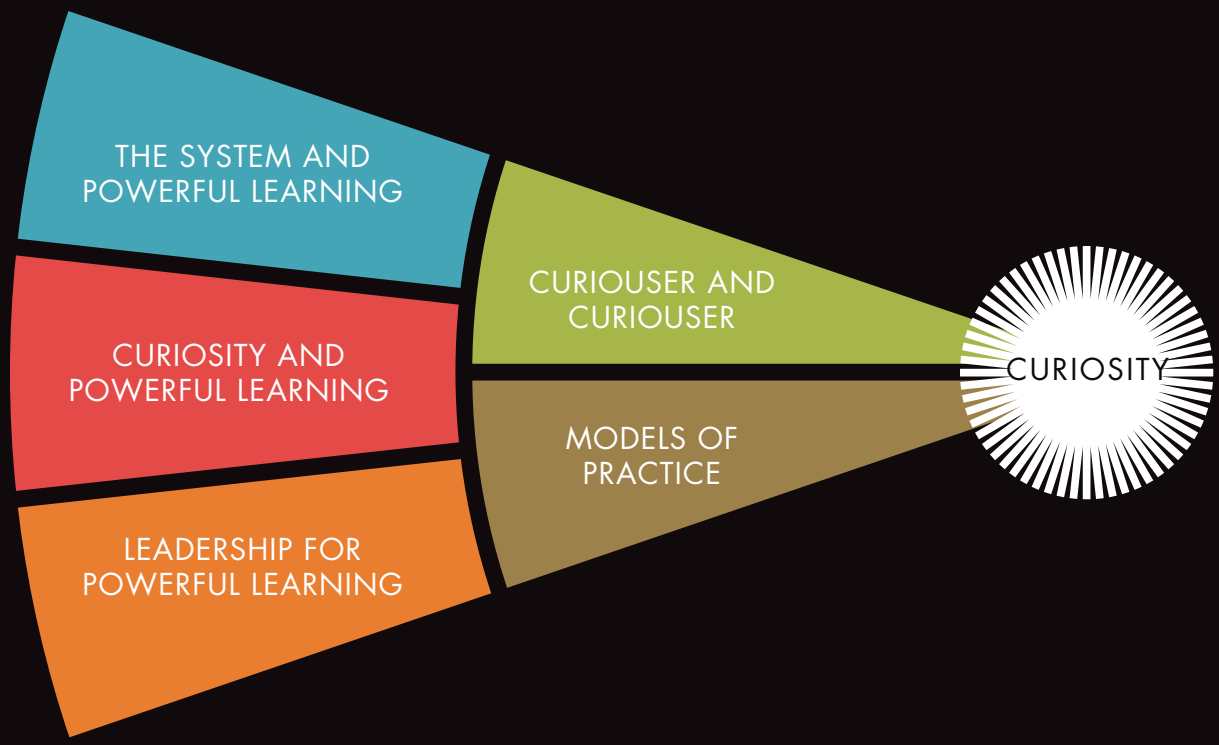
THE CURIOSITY AND POWERFUL LEARNING SERIES

The Curiosity and Powerful Learning manuals are designed for teachers and for school and system leaders who are embarked on a school improvement journey. The manuals describe how schools can lift student learning. The steps are drawn from practical experience, tested and refined in schools over time.

Three manuals are at the core of the series – *The System and Powerful Learning*, *Curiosity and Powerful Learning*, and *Leadership for Powerful Learning*. Together they explain how powerful learning is made real for our students through purposeful, specific changes in whole school culture, classroom culture, leadership, and teaching practice.

The series includes *Curiouser and Curiouser* and *Models of Practice* manuals which concentrate on precision in teaching practice. They stand as references for improving, planning, and monitoring professional practice, assisting us to get to the heart of the learning enterprise.

The manuals recognise that schools differ, and must differ in responding to their communities. Diversity among schools is cause for celebration, as is consistently high student learning outcomes in all schools. Each manual emphasises the collective endeavour essential to achieving curiosity driven powerful learning. Teachers work together, students become more adept at using curiosity as a learning resource, leaders communicate purpose and direction. We all monitor outcomes and adapt as we go. We are all professional learners.



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CURIOSITY AND POWERFUL LEARNING

Lifting student learning is a collaborative enterprise. It relies on students, teachers, and school leaders working together. The way we collaborate is governed by a school's culture and ethos – common practices, shared language and beliefs, mutually reinforced values and expectations, jointly recognised accountability and responsibility.

Lifting student learning does not happen serendipitously. It cannot happen if we keep doing what we are already doing and wait for change to occur.

ACHIEVING SUSTAINABLE CHANGE IN SCHOOLS

Lifting student learning requires considered planning, careful implementation, and ongoing monitoring. Yet there is a paradox in education. We introduce many changes and so often seem to end up with no change at all. The paradox is resolved by working with people to change culture, by collaboratively changing 'the way we do things around here'. We need to change the school environment so that it is ready for, and welcoming of, approaches to teaching and learning designed to promote student curiosity.

This manual is concerned with changing a school's learning and teaching culture so that we secure enduring and productive change. In doing this we believe your school has two great advantages:

- FIRST, you – students, teachers, school leaders – are the agents of change for your school. You can greatly benefit from the assistance of colleagues in other schools. But in the end the change is yours to make, or break.
- SECOND, you are the world experts about your school.

Together with your school community, you are best placed to identify and analyse what you are doing now, and what you need to do next to enhance student learning.

THE CURIOSITY AND POWERFUL LEARNING SERIES

The three core manuals in the Curiosity and Powerful Learning series invite each of us to a deeper understanding of what great learning looks like, and what great teaching practice entails. *The System and Powerful Learning* describes the distinctive benefits and structure of the powerful learning approach for schools and their students. It demonstrates how school networks and school systems are influential in shaping and sustaining school improvement strategies. *Leadership for Powerful Learning* explains the material impact that school and system leaders have on student learning, and describes what leaders can do to bring powerful learning into school communities.

This manual, *Curiosity and Powerful Learning*, presents specific approaches to teaching and learning that we know to be effective in laying the foundations for powerful learning. Ten Theories of Action – four for the whole school, and six for teachers – form the centerpiece of this manual. *Curiouser and Curiouser* and the *Models of Practice* manuals describe precise teaching and learning practices that build on those foundations.

CURIOSITY IS THE BACKBONE OF OUR STRATEGY

The Theories of Action have emerged from observing and analysing explicit teaching and learning strategies in many hundreds of schools. We undertook that observation and analysis with the active participation of thousands of teachers and school leaders. The generosity of teachers is a signature of our profession. In Australia, the UK, and elsewhere, teachers invited small groups of colleagues to sit in their classrooms and collect data about what students and teachers were doing. Allied with instructional rounds, we conducted focus groups with students to get a firm grasp on what happens in classrooms that boosts or impedes their learning.

Through this extensive and engaging collaboration teachers and school leaders have contributed their practice wisdom to framing teaching approaches that enhance our students' curiosity. Curiosity became a pivot because we know, through our instructional rounds, that curiosity is rich territory for students and teachers alike. It enlivens classrooms and enlightens learners.

Curiosity is an achievable goal for our students if we make it tangible. If we make it something they can focus on. So let's be clear. Curiosity is represented by the learning skills and the spirit of inquiry we want all our students to acquire. Curiosity is explicit in the classroom strategies we use to develop, refine, and inspire our students' learning skills.

This manual identifies strategies for school leaders and teachers that nurture within our students an abiding curiosity about their world. Curiosity drives the impulse to learn. It thrives in the presence of high expectations and authentic relationships.

OUR OVERARCHING THEORY OF ACTION

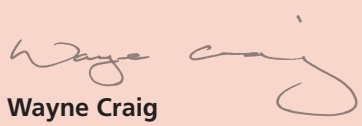
The ten Theories of Action in this manual are bound together by one overarching Theory of Action:

WHEN teachers, strongly supported by their schools, explicitly and consistently incorporate the Theories of Action in their teaching

THEN our students' curiosity enriches their learning skills and their spirit of inquiry.

In practical detail, *Curiosity and Powerful Learning* unpacks this overarching Theory of Action.

David Hopkins



Wayne Craig

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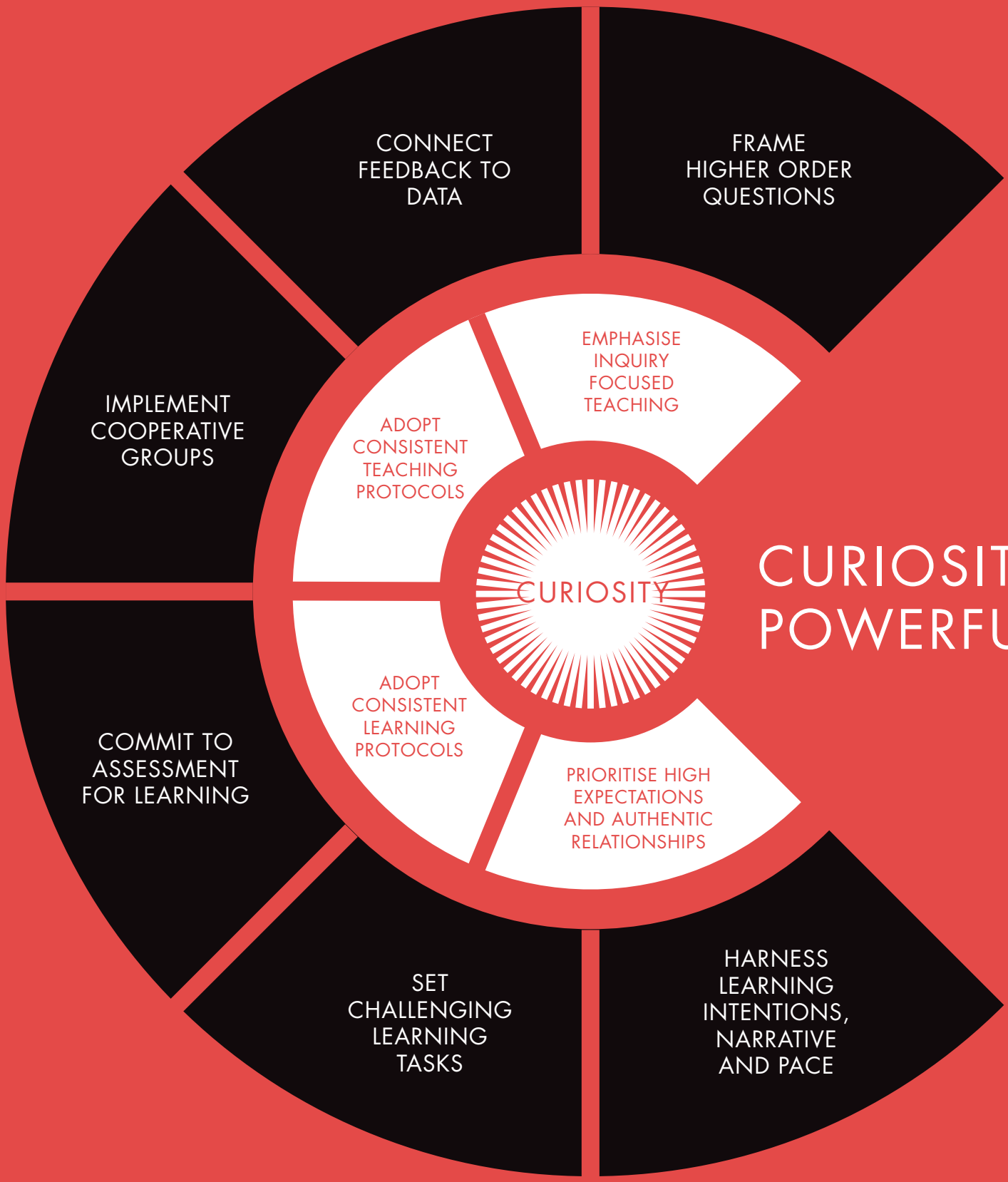


CURIOSITY AND POWERFUL LEARNING

THEORIES OF ACTION

The manuals in this *Curiosity and Powerful Learning* series rely on ten Theories of Action. A Theory of Action is a common reference point, a shared guide. It assists us to identify, design, implement, and evaluate teaching and leadership practices that expand our students' ability to use curiosity as a doorway to powerful learning. A Theory of Action proposes a link between cause and effect:

WHEN we take a particular action **THEN** we expect that action to have specific effects.

TEN THEORIES OF ACTION

Our ten Theories of Action are listed on the facing page and are described in further detail later in this manual.

There are:

- FOUR WHOLE SCHOOL THEORIES OF ACTION. They create and maintain the conditions within which the Theories of Action for Teachers can flourish.
- SIX THEORIES OF ACTION FOR TEACHERS. They link specific teaching strategies with curiosity-driven learning.

The Theories of Action for Teachers describe what outstanding teaching looks like. As we shall see, they reflect the best summaries of research on effective teaching. They also reflect the standards for high quality teaching established by many school systems.

Taken as a whole, and in the order presented in this manual, the Theories of Action also reflect the model of practice commonly known as Whole Class or Direct Instruction. An example of this is the Explicit Instructional Model, implemented at Hume Central Secondary College and exhibited on page 15.

TEACHING TACTICS AND TEACHING STRATEGIES

There is an important distinction between teaching tactics and teaching strategies.

In many ways the Theories of Action for Teachers are tactics – teacher behaviours that have a direct and precise impact on student learning. They are specific actions that respond to specific classroom circumstances. For example, framing a learning intention sets the context for learning, questioning encourages reflection and problem solving, group work establishes the social conditions for inquiry. Tactics are the core repertoire of teaching skills.

We use the term 'models of practice' for teaching strategies that describe the approach for an entire lesson or curriculum unit. Whole Class Teaching is the best known model of practice. But there are other effective models of practice as we discuss on page 30 of this manual.

The good news is that in different combinations the six Theories of Action for Teachers comprise the essential building blocks for the Whole Class Teaching model and other models of practice. This manual lays a foundation for six other models of practice described in the *Models of Practice* manuals in this series.

HOW TEACHERS VIEW THEIR PRACTICE

City and colleagues (2009) note that teaching is often characterised by an individualism in which the person and their teaching practice are intertwined. This perspective leads to the proposition that 'my teaching practice defines who I am as a person.'

Yet other professions share a common practice and open it to public scrutiny. This is a helpful perspective for teachers because it leads to a different proposition: 'my teaching practice is an instrument for expressing who I am as a professional.'

City and colleagues adopt a precise definition of teaching practice:

> *We mean a set of protocols and processes for observing, analyzing, discussing and understanding instruction that can be used to improve student learning at scale. The practice works because it creates a common discipline and focus among practitioners with a common purpose and set of problems.*

Seen like this, practice is a way for teachers to express their current understanding of their work, their knowledge about their work, and their beliefs about what makes the work important. All these things change because a teacher's professional knowledge, skill, expertise, and understanding of their work are always expanding.

OUR TEN THEORIES OF ACTION

Our Theories of Action are also listed in tables on a fold out page at the back of this manual. You can use the tables as an aid in assessing how well your school, and your practice, reflects each Theory of Action.

FOUR WHOLE SCHOOL THEORIES OF ACTION

Four Whole School Theories of Action support teaching for curiosity and achievement. They are fundamental in every school and for all teaching practice. They create a reliable, consistent, supportive environment for implementing the six Theories of Action for Teachers.

PRIORITISE HIGH EXPECTATIONS & AUTHENTIC RELATIONSHIPS

WHEN schools and teachers prioritise high expectations and authentic relationships
THEN curiosity will flourish.

EMPHASISE INQUIRY FOCUSED TEACHING

WHEN inquiry is a defining characteristic of a school's culture
THEN the level of student achievement and curiosity will increase.

ADOPT CONSISTENT TEACHING PROTOCOLS

WHEN we adopt consistent teaching protocols
THEN student behaviour, engagement, learning, and curiosity will be enhanced.

ADOPT CONSISTENT LEARNING PROTOCOLS

WHEN we adopt consistent learning protocols in all classes
THEN all students will experience an enhanced capacity to learn, and to develop skills, confidence, and curiosity.

SIX THEORIES OF ACTION FOR TEACHERS

These Theories of Action are about teaching. They form the core teaching protocols for the whole school.

HARNESS LEARNING INTENTIONS, NARRATIVE & PACE

WHEN we harness learning intentions, narrative, and pace so students are more secure about their learning, and more willing to take risks
THEN achievement and understanding will increase and curiosity will be enhanced.

SET CHALLENGING LEARNING TASKS

WHEN learning tasks are purposeful, clearly defined, differentiated, and challenging
THEN all students will experience powerful, progressive, and precise learning.

FRAME HIGHER ORDER QUESTIONS

WHEN we systematically employ higher order questioning
THEN levels of student understanding will deepen and levels of achievement will increase.

CONNECT FEEDBACK TO DATA

WHEN we connect feedback to data about student actions and performances
THEN behaviour will be more positive, progress will accelerate, and curiosity will be enhanced.

COMMIT TO ASSESSMENT FOR LEARNING

WHEN we commit to peer assessment, and assessment for learning
THEN student engagement, learning, and achievement will accelerate.

IMPLEMENT COOPERATIVE GROUPS

WHEN we implement cooperative group structures and techniques to mediate between whole class instruction and students carrying out tasks
THEN the academic performance of the whole class will increase.

HOW TEACHERS CONSTRUCTED THE THEORIES OF ACTION

THE STORY OF OUR INSTRUCTIONAL ROUNDS

To establish a new culture of teaching and learning in our schools we must consciously adopt strategies that:

- generate a common language of teaching practice
- weave the strands of practice into an active professional practice that is apparent in and across schools
- focus greater attention on the knowledge and skill requirements of doing the work.

To build a culture of teaching and learning we adopted the 'instructional rounds' approach. Instructional rounds involve networks of teachers and leaders who agree to schedule significant and systematic time to develop a common language about learning and teaching. Each instructional round inquires into the teaching and learning practice of the school, and in so doing:

- describes the practice
- devises ways to enhance the practice
- determines how changes to practice can lead to the next level of professional work in the school.

THE INSTRUCTIONAL ROUNDS PROCESS WORKS LIKE THIS

The network convenes in a school for a rounds visit hosted by a network member. The task of network members is to inquire into a teaching and learning practice in the host school.

Network members divide into small groups and visit a rotation of six classrooms for about 20 minutes each. In each classroom, network members collect descriptive evidence about practice in the host school.

After completing classroom observations, network members assemble to work through this process:

- Analyse the evidence for patterns in, and explanations for, the observable student performance in the school.
- Develop a series of constructs that provide an analytic description of what they have observed.
- Develop Theories of Action for each construct.

Network members provide feedback to the school and teachers involved in the rounds visit. (*No* comments are made about the behaviours of individual teachers.)

The host school uses the Theories of Action as a basis for planning ongoing professional development.

Our instructional rounds deliberately and effectively disclosed the deep, practical knowledge base of teachers. Their knowledge became a pivot for refining Theories of Action that discipline the culture of teaching and learning in the school and across the schools participating in the network.

We have deepened our experience with instructional rounds involving schools in the UK, Australia, and elsewhere. We have learned five important lessons.

FIVE LESSONS FROM INSTRUCTIONAL ROUNDS THAT GUIDE OUR POWERFUL LEARNING WORK

1. Similar Theories of Action are defined and implemented in most schools, despite differences in schooling phases and contexts.
2. To impact on student learning in a sustained way, it's necessary to integrate all Theories of Action into a teacher's professional repertoire. We do not offer a 'pick and mix' approach.
3. All Theories of Action are characterised by teaching approaches with *inquiry* at their centre.
4. Some Theories of Action are about the whole school, and some are about the individual practice of teachers.
5. All Theories of Action have a high level of empirical support in the research literature.

Through our instructional rounds we have developed the Powerful Learning approach, based on ten Theories of Action developed from the practice of teachers. If consistently applied, the practice encompassed in the Theories of Action will reshape a school's teaching and learning culture, enhance students' achievement, and broaden their skills and confidence.

THE EVIDENCE FOR OUR THEORIES OF ACTION

Each of our Theories of Action draws on a strong evidence base.

As we researched our ten Theories of Action, we found that their effectiveness is supported by strong empirical evidence. Educational research backs up what we found through our own observations and experiences during instructional rounds.

In this manual we present 'effect size' evidence from various sources for our Theories of Action.

EXPLAINING 'EFFECT SIZE'

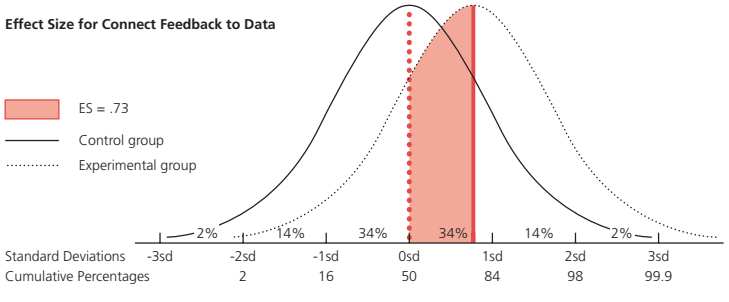
An effect size is a way of quantifying the expected gains in student learning from applying the teaching practice encompassed by a Theory of Action. The practice shifts the 'curve of normal distribution' – what we can call the performance curve. Teaching practices that yield positive effect sizes merit our professional attention.

Take the effect size for one of our Theories of Action for Teachers – Connect Feedback to Data (see pages 24-25). The graph below shows the results for two groups of students:

- For **control group** classes, teachers do not systematically connect feedback to data. The 'average student' in the control group performs at the 50% mark, shown by the dotted red vertical line.
- In **experimental group** classes, teachers systematically and precisely connect feedback to data. When this happens, average performance is much higher. The performance curve has shifted to the right, meaning the 'average student' in the experimental group performs at the level shown by the solid red vertical line.

That new performance average is expressed as an effect size of 0.73. This means that in the experimental group, where data and feedback are closely connected, learner performance improves by about 27 percentage points compared to control group performance.

Connecting feedback to data has a very positive effect on student learning. When teachers connect feedback to data in the precise, specific ways outlined in this manual there is strong evidence that the performance of the whole class will be substantially higher.



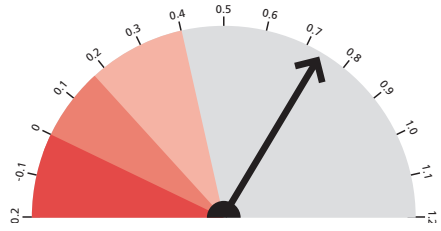
HOW WE SHOW EFFECT SIZES AND OTHER IMPACTS IN THIS MANUAL

We report effect sizes from a number of sources for practices related to each of the Theories of Action in this manual.

For example, the effect size of 0.73 for Connect Feedback to Data is shown like this.

EFFECT SIZE
0.73

There are many ways of showing effect sizes. In his book, *Visible Learning*, John Hattie analyses the evidence from hundreds of research studies about how different practices influence student learning. He presents the findings using an effect size barometer. *Visible Learning* presents the effect size for feedback like this.



A CAUTION ABOUT EFFECT SIZES

There are ongoing debates about how to calculate effect sizes and there are various approaches to reporting them. In the following pages we show effect sizes reported by well regarded researchers in the field. Some of the effect sizes are much higher than others. Our perspective is that an effect size is a reliable indicator of which practices make a significant difference for student learning compared to all the practices available to us. Comparing effect sizes helps us select the practices that have the highest claims on our investment in professional learning and development.

The Education Endowment Fund (EEF) in England has developed another way of illustrating the impact of specific teaching practices on learning. The EEF's *Toolkit* expresses impact in three ways.

1 AVERAGE IMPACT

The additional months progress in a year that a student is likely to make as a result of using a specific teaching practice.

This is another way of presenting the effect size.

We show average impact like this:

+2 MONTHS

2 COST ESTIMATE

The estimated cost of implementing a specific teaching practice in a class of 25 students. The estimate includes costs of professional development that ensures the practice is consistently implemented.

We show very low cost like this:

$

We show very high cost like this:

$$$$

3 STRENGTH OF EVIDENCE

The Toolkit estimates the strength of the evidence for specific teaching practices.

We show very limited evidence like this:

★

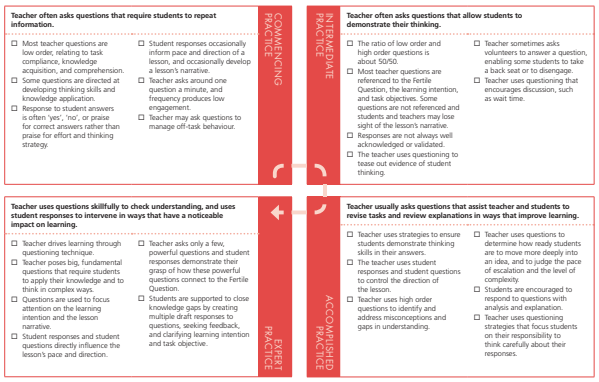
We show strong evidence like this:

★★★★★

USING THE TEACHER RUBRICS

THE PURPOSE OF THE RUBRICS

This manual describes six Theories of Action for Teachers and each is accompanied by a rubric. Each rubric is precise about habits, behaviours and ways of doing that characterise teacher practice at four phases in a professional development continuum – Commencing, Intermediate, Accomplished, and Expert. They are presented in four domains like this.



The teacher rubrics have four primary purposes:

- to set out clearly the habits, behaviours, and performance expectations that characterise teaching of the highest quality, reflected in the Expert phase
- to support personal reflection by teachers about where their practice falls on the continuum
- to provide a common reference point and language for teachers and school leaders to use when they discuss teaching practice and teacher performance
- to inform planning for professional learning and development for individual teachers, groups of teachers, and for the whole school.

Our hope is that school leaders and teachers will use the rubrics to extend and deepen every teacher's professional expertise.

The rubrics in this manual are abbreviated versions taken from a comprehensive set of rubrics written by Oli Knight.

THE RUBRICS FOCUS ON THREE FUNDAMENTAL STUDENT OUTCOMES

Each rubric incorporates three objectives that apply to every student.

ENSURING MASTERY	Teachers plan with an unrelenting focus on high standards to ensure all students achieve mastery
CONTINUAL DEVELOPMENT	Every action and every communication is focused on the individual student's ability to constantly grow and improve
LONGEVITY	All students set and achieve their goals, and all students are ready for post-school education and employment

THE RUBRICS ARE ABOUT PROFESSIONAL PRACTICE

They are about what we do as teachers. And they are realistic about what we do.

Our practice may be both expert and intermediate at the one time. Perhaps we have concentrated on setting high expectations, and have become expert at that, but have not had the opportunity to build capability in managing cooperative groups.

The phases don't represent a fixed progression in professional development. We don't finish school one day with Intermediate Practice and start the next with Accomplished Practice.

When neuroscience researchers reveal a new and surprising finding about how we learn, every teacher becomes a commencing practitioner working to turn that new finding into something tangible that can be done in a classroom.

THE RUBRICS ARE ABOUT PROFESSIONAL DEVELOPMENT

They assist teachers and school leaders to manage professional performance by identifying what kinds of professional learning and support will improve practice to the benefit of our students. The rubrics provide tools for situating and evaluating current practice and mapping a pathway for productive improvement.

We make a blunt distinction between expert practice and time on the job. It does not help students or schools if over time we become very good at doing less effective things. The rubrics assume that great teachers are constantly rewriting the itinerary for their professional development journey.

THE RUBRICS ARE FLEXIBLE

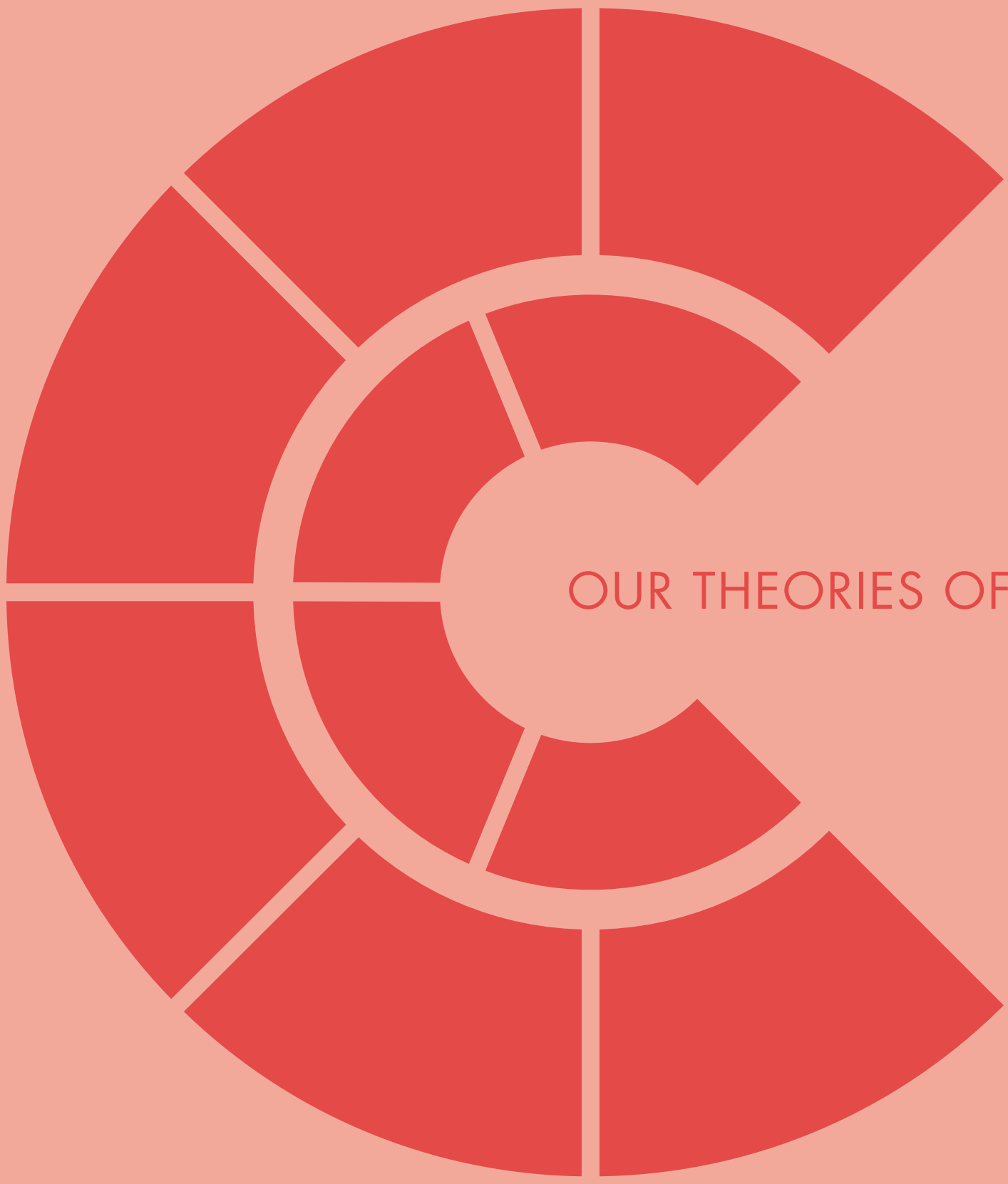
Teachers are always working towards a wise and workable balance of many linked factors that appropriately influence our work in classrooms – school improvement priorities, innovative teaching methods, curriculum change, learning technologies, to name a few.

We encourage teachers and school leaders to adapt the rubrics to suit changing circumstances.

THE RUBRICS ARE TOOLS FOR ACHIEVING PROFESSIONAL MASTERY THROUGH COLLABORATION

Refining professional practice is a collaborative endeavour.

Using a common language and structure, the rubrics support professional conversations and collective inquiry. They contribute to professional learning by grounding peer observation and collective reflection in what teachers and students actually do in a lesson. They indicate stepping stones from current practice to improved practice.



OUR THEORIES OF ACTION

1 PRIORITISE HIGH EXPECTATIONS & AUTHENTIC RELATIONSHIPS

THEORY OF ACTION FOR THE WHOLE SCHOOL

WHEN schools and teachers prioritise high expectations and authentic relationships

THEN curiosity will flourish.

We believe high expectations and authentic relationships increase our students' confidence and curiosity, energising their commitment to learning. When we prioritise high expectations and authentic relationships, we believe the whole school's ethos and culture prosper.

ELABORATION

High achievement by every student depends on the environment we create for learning. The teacher 'who made a difference' is a common conversation topic. Our conversation has a more inclusive starting point: every teacher makes a difference.

Positive learning environments are optimistic and rigorous. Every student can achieve. The focus on learning is exacting. Positive environments value all students. This happens when teachers generate and sustain authentic relationships.

The influence of teacher expectations is often subtle. Expectations are conveyed in a myriad of classroom interactions. Positive expectations drive a positive learning culture – the classroom is a safe and secure place to learn. In that classroom, students know they will receive acceptance, respect, and even warmth. Acceptance and respect are intrinsic rights – they are not contingent.

Our students know these rights are extended without prejudice, simply because we are with them as individuals and as learners.

SPECIFICATION

To establish and maintain authentic relationships, and to communicate high expectations, we need to work with behaviours instead of feelings. We must be aware of our actions, ensuring all our students are treated in the same way. When we hold low expectations of some students, and high expectations of others, then we can expect our students to meet the expectations we have for them.

Looking in Classrooms (2008) proposes a model to explain teacher expectation effects.

Early in the year we form differential expectations for student behaviour and achievement

Consistent with our differential expectations we behave differently towards each student

This treatment tells our students something about how we expect them to behave in the classroom and to perform on academic tasks

If our treatment is consistent over time it is likely to affect each student's self-concept, achievement motivation, aspiration levels, classroom conduct, and interactions with us

These effects complement and reinforce our expectations

The likely outcome? High expectation students achieve at or near potential. Low expectation students gain less than they might if we taught them differently.

EXHIBIT

EXPECTATIONS AND RELATIONSHIPS

At first glance it may seem odd to bring together high expectations and authentic relationships in one Theory of Action. The explanation is straightforward.

High expectations are challenging. They are demanding, constant, not negotiable. We know high expectations powerfully influence the learning environment and learning outcomes. Embedding high expectations is an indispensable priority for every school.

There is a fundamental condition for successfully incorporating high expectations into a school's culture. They can only be sustained when relationships are authentic – reliable, transparent, supportive, and respectful. Authentic relationships are also consistent – they are modelled, practiced, and reinforced across the whole school.

We must accept that high expectations apply to all members of the school community, and that students, teachers and other school community members are equally responsible for maintaining authentic relationships.

The audit tools on the opposite page can assist a school community to assess the status of expectations and relationships in the school. The tools can prompt conversations about where we are, where we are headed, what to celebrate, and where to focus change.

PROFESSIONAL LEARNING OPPORTUNITIES

Select a few items from the audit tools – 3-5 from each list. Collect data about the selected items from school community members about their experience outside class time – at recess, parent-teacher meetings, school sports events, the school office, staff meetings. Analyse the data and collectively agree priorities for change. All teachers, school leaders, support staff, and students can collect and analyse data.

EFFECT SIZE

0.43 Effect size of teacher expectations.
– Hattie, 2009.

0.42 Establishing goals and expectations as a dimension of school leadership that influences students' academic outcomes.
– Robinson, Lloyd and Rowe, 2008.

HIGH EXPECTATIONS – AUDIT

IN OUR SCHOOL …	IN PLACE? No	Partly	Mostly	Yes
We believe all students can learn				
We sustain a high expectations climate				
We convey optimism & hope				
We attribute the best possible motive to behaviour				
We affirm & encourage the best in others				
We help to reframe problems as opportunities				
We see needs as motivating behaviour & learning				
We challenge & support				
We connect learning to student goals & dreams				
We convey to all students that they are resilient				
We promote creativity & imagination				
We discipline strictly & fairly				
We provide clear explanations				
We hold students & staff accountable				
We encourage self-awareness of moods				
We encourage self-awareness of thinking				
We aim to excel at everything we do				
We constantly look to improve everything we do				
We have outstanding, well distributed leadership				
We use authentic assessment				
We never relax our high expectations & strong values				
We use rituals & traditions				
We focus relentlessly on improving teaching quality & reducing variability in teaching quality				
We use a variety of instructional models				
We help families see students' goals, strengths & interests				
We know achievement follows reflection, careful strategy planning, implementation & evaluation				
We see students as constructors of their own knowledge & meaning				
We continuously challenge racism, sexism, ageism, classism, homophobia				
We focus on the whole child – social, emotional, cognitive, spiritual, & physical				
We connect learning to student experiences, interests & strengths				
We display outstanding student work in corridors, classrooms, foyers, staff rooms				
We – students & teachers – know what outstanding work looks like				
We apply high expectations & strong values consistently & fairly				
We contact home to report students' good behaviour & achievements				
We use strengths & interests to address concerns & problems				
We understand & act on the critical importance of high expectations				

AUTHENTIC RELATIONSHIPS – AUDIT

IN OUR SCHOOL …	IN PLACE? No	Partly	Mostly	Yes
We create & sustain a caring climate				
We have a long term commitment to our community				
We actively listen & give voice to our community				
We treat everyone with dignity & respect				
We trust our students				
We support our students unconditionally				
We give our students real responsibilities				
We put people before structures & processes				
We show fundamental positive regard				
We look beneath 'problem' behaviour				
We reach beyond the resistance of some students				
We love to laugh				
We are flexible				
We build community				
We meet developmental needs for belonging & respect				
We show common courtesy				
We get to know the hopes & dreams of our community				
We get to know the life context of our students				
We get to know the interests of our students				
We are nonjudgmental				
We show interest in our community				
We are available & responsive				
We expect, allow & support students to take a large measure of responsibility for their own learning				

2 EMPHASISE INQUIRY FOCUSED TEACHING

THEORY OF ACTION FOR THE WHOLE SCHOOL

WHEN inquiry is a defining characteristic of a school's culture

THEN the level of student achievement and curiosity will increase.

We believe inquiry focused instruction is the foundation for high quality teaching. An emphasis on inquiry leads to improved achievement and enhanced curiosity.

ELABORATION

Inquiry focused teaching seeks ambitious outcomes for our students, beyond just acquiring curriculum knowledge. Schools need definitions of classroom practice that underpin a shift to teaching that is focused on developing students' curiosity and engagement in inquiry.

It is best for each school to develop its own definitions of practice. And it is best done collaboratively as a way of building and extending ownership and understanding.

As a guide to that whole school task, *Models of Learning, Tools for Teaching* poses a radical definition of the practice of teaching and learning:

> *Learning experiences are composed of content, process and social climate. As teachers we create for and with our children opportunities to explore and build important areas of knowledge, develop powerful tools for learning, and live in humanizing social conditions.*

Your school's definition of classroom practice will have real effect when it is:

- reflected in a shared language
- implemented through strategies that provide a guide to action in the school and in every classroom.

The approach we propose to inquiry focused teaching draws on the use of fertile questions (Harpaz, 2005).

SPECIFICATION

A Fertile Question frames the curriculum as a proposition. It poses a problem to solve and a question to answer. A Fertile Question engages our students. It motivates them and gives them good reasons to care about answering it.

Here is a guide to framing and refining a Fertile Question that drives inquiry in a lesson or series of related lessons.

GUIDELINE 1

Start with a BIG, essential question. Make it a question that is debated in the world and is used by practitioners of the discipline. Prefer a question that a professional mathematician or historian might ask before venturing into the unknown for answers. Could the Earth spin without mathematics? Does history tell a story of progress or repetition?

GUIDELINE 2

It is essential that the question is framed within the concept it is focused on. A Fertile Question about evidence in physical education might be: 'How do we know that exercise has health benefits?' A Fertile Question about perspective in English might be: 'Why do we share stories?'

GUIDELINE 3

Design a concluding activity that requires a constructed response to the Fertile Question. A constructed response is 'a performance of understanding'. It creates a tangible product that demonstrates understanding and solves the problem posed by the question.

GUIDELINE 4

Plan backwards. Start with the end product or performance of understanding. Work out what knowledge and skills your students will need to address the question and create a meaningful response to it. Decide what activities you will use to develop the essential knowledge and skills. Ask yourself: What needs to happen in each phase of the lesson or lessons that will allow my students to resolve the problem?

EXHIBIT

THE TEACHING AND LEARNING CYCLE

The Teaching and Learning Cycle is a way of ensuring that every Fertile Question has an impact on progress and attainment.

The Teaching and Learning Cycle forms the overarching scaffold for every lesson and inquiry. The cycle works by posing seven key questions that enshrine the construction of each inquiry. It is a simple and very effective way for all teachers to manage the medium-term planning process.

These questions have two advantages:

- They provide rigour, ensuring that the needs of the curriculum are met
- They are loose enough to allow teachers and learners the creativity and freedom they need to plan and deliver learning outcomes.

PROFESSIONAL LEARNING OPPORTUNITIES

Through discussion and collaborative lesson study across curriculum areas and year groups, establish a common whole school understanding and practice for developing Fertile Questions. Use the tools on the opposite page – the Teaching and Learning Cycle, and the Audit tool – to gather evidence and ideas for discussion and lesson study.

EFFECT SIZE

1.14 This effect size compares students' level of understanding of material in classes that engage in experimental inquiry and classes that do not.
– Marzano, 1998.

0.65 Effect size for generating hypotheses as an instructional strategy.
– Beesley and Apthorp, 2010.

TEACHING AND LEARNING CYCLE

1
What can my students currently do?

2
What do my students need to understand next?

3
What will my students do to generate these understandings?

4
How will we all know – students and teacher – that they have succeeded?

5
What will their feedback be at each stage of the lesson or series of lessons?

6
What performances of understanding will there be during a lesson and at the end of this particular inquiry?

7
What does this inquiry prepare my students for next?

How does it build on what they have already done?

NOTE: Your responses to these questions are essential preparation for planning the next lesson or series of lessons. It's important to link your response to:

- the BIG picture of learning outcomes for the year
- the curriculum expectations for a learning area.

AUDIT YOUR LESSON'S INQUIRY FOCUS

Check a lesson plan against this audit tool.

Will this lesson…	When?	Why and how?	Is technology involved? How?
link to the Fertile Question?			
see students leaning forward?			
have friendly competition?			
present a challenge?			
involve controversy?			
require some creativity?			
ask students to make decisions?			
connect to 'real life'?			
entail problem based learning?			
spark an investigation?			
solve a problem?			
ask students to build meaning?			
draw on explicit thinking skills?			
see students create a product?			

3 ADOPT CONSISTENT TEACHING PROTOCOLS

THEORY OF ACTION FOR THE WHOLE SCHOOL

WHEN we adopt consistent teaching protocols

THEN student behaviour, engagement, learning and curiosity will be enhanced.

We believe the most powerful curricular and teaching patterns induce our students to construct knowledge – to inquire into subject areas intensively. We believe that when we use these patterns consistently we increase our students' capacity to learn and work smarter.

ELABORATION

Teaching protocols are a set of guidelines for observing, analysing, discussing, and understanding teaching.

Protocols are used to improve student learning. Because they represent an agreed whole school purpose and approach, they create:

- an explicit professional practice within a school
- a common discipline and focus among teachers and school leaders.

Convention regards teaching as an individual achievement and a private practice. The weakness of this view of teaching practice is that even when the practice is individually excellent, it is implicit and often unarticulated – this means that excellent practice is inaccessible to other teachers.

The manuals in the Curiosity and Powerful Learning series have a different and more professionally satisfying message. Our message is this:

- the whole school – students and teachers – reap great benefits when excellent practice is shared in precise and practical ways
- sharing our practice is an essential ingredient in creating and sustaining a consistent learning culture and ethos across the whole school.

SPECIFICATION

We distinguish between:

- tactics – these are the six Theories of Action for Teachers described on pages 18-29 of this manual
- strategies – these are the Models of Practice described in other manuals in the Curiosity and Powerful Learning series. (On page 30 of this manual we discuss how the Models of Practice interact with the Theories of Action).

There are protocols for both the Theories of Action and the Models of Practice.

The protocol described here relates to models of practice. A model of practice simultaneously defines:

- the nature of the content
- the learning strategies
- the social interaction arrangements that create our students' learning environments.

Each teaching model provides scaffolding that brings about particular kinds of learning, and that helps students become lifelong learners – to know how to go about their own learning.

The protocol on the facing page is an example of the Whole Class Teaching or Direct Instruction model. It is the Explicit Instruction Model developed at Hume Central Secondary School in Melbourne, Victoria. The six Theories of Action for Teachers described on pages 18-29 are all represented in this overall protocol for the model of practice.

EXHIBIT

EXPLICIT INSTRUCTIONAL MODEL HUME CENTRAL SECONDARY COLLEGE

The Explicit Instructional Model adopted by Hume Central Secondary College is based closely on the Direct Instruction teaching model.

Direct Instruction is a widely used teaching approach. In practice it can lead to lessons dominated by teacher talk. By carefully specifying the phases of the model, teachers at Hume Central Secondary College ensure they achieve the correct balance between teacher instruction and student activity – all within a clear set of learning intentions.

Direct Instruction appears quite conventional. However, a close assessment reveals that it accommodates all six Theories of Action for Teachers that are described in this manual. Some of these links are demonstrated below.

Set Challenging Learning Tasks

Harness Learning Intentions, Narrative, & Pace

Frame Higher Order Questions

Implement Cooperative Groups

Commit to Assessment for Learning

Connect Feedback to Data

PROFESSIONAL LEARNING OPPORTUNITIES

Use the Direct Instruction model as a template – compare it with your school's approach to teaching.

Inform reflective practice and collegial discussion. Use the Direct Instruction model as an aid to understanding how teachers can bring together the three elements of this Theory of Action: learning intentions, narrative, and pace.

Note: In the Direct Instruction model, the design and implementation of teacher led phases reflect significant collaborative planning between teachers. A central outcome of that planning is a common platform for teaching.

EFFECT SIZE

1.48 Effect size for enhanced context strategy, in which 'teachers relate learning to students' previous experiences or knowledge, or engage students' interest through relating learning to the students'/schools' environment or setting.'

– Beesley and Apthorp, 2010.

EXPLICIT INSTRUCTIONAL MODEL: HUME CENTRAL SECONDARY COLLEGE

Phase Of Lesson		Essential Elements	Plan
Beginning Of Lesson	THE HOOK Grab students attention and put them in a receptive frame of mind 1-5 minutes	– Stimulate interest and curiosity (for example, by using visuals) – Present a purpose for learning – Connect learning to real world experiences – Foster positive relations with and between students	How will you hook your students into the lesson?
	LEARNING INTENTIONS Make the LEARNING INTENTIONS and SUCCESS CRITERIA clear to students 2-5 minutes	– Use student friendly language – Establish learning goals: write them on board or display on screen – Make assessment and performance requirements clear ('At the end of this lesson, you will know/be able to do/have done …') – Show examples, or models, of EXPECTED student performance (like an excellent sample of work by a student in a previous year)	What are your learning intentions and success criteria, in student friendly language?
	ACTIVATE/REVIEW Activate prior knowledge and review relevant prior learning 5-10 minutes	– Opportunities for students to demonstrate their current level of understanding through verbal and non-verbal means – Review/connect to prior learning – Use questioning techniques – Brainstorm – Key words elicited/taught/displayed	How will you activate prior knowledge and review relevant prior learning?
Presentation	TEACHER INPUT Explicitly teach the CONCEPT	– Provide clear explanation, definition or rule (short, sharp, shiny!) – Provide examples and non-examples – Uses students' previous experiences as basis for explaining concepts – Information presented visually, and/or concrete examples – Concept represented in multiple ways – Explicit teaching of vocabulary OR quick review of relevant vocabulary previously taught	How will you teach the concept?
	TEACHER INPUT Explicitly teach and model the SKILL	– Steps provided as a scaffold – Examples provided – Information presented visually – Reveal your inner thought processes to students – modelling – Modelling short and purposeful	How will you teach the skill? What are the steps?
	CHECK FOR UNDERSTANDING Monitor whether students have 'got it' before proceeding If not, the concept or skill should be re-taught before guided practice begins	– Well-distributed questioning/checking for understanding – Wait time – Higher level questions – Asks for justification (evidence) and clarification from students – Adjustments made due to feedback if needed – Challenge misconceptions – Have students paraphrase and summarise	How will you check for understanding?
Guided Practice	DEVELOPMENT AND ENGAGEMENT Develop student understanding of the concept or skill through activities or exercises	– Tasks, activities or exercises provide well scaffolded opportunity for students to apply the knowledge or skill – Clear instructions, clear timeframe, clear expectations – Range of tasks that appeal to different learning styles and ability levels (rotating tasks at times) – Effective use of elearning tools and programs	What activities or tasks will you ask students to undertake?
	FEEDBACK & INDIVIDUAL SUPPORT Move around the room to determine the level of mastery, and to provide feedback and individual support as needed	– Teacher identifies students needing additional support/guided practice – Teacher moves around the room – Teacher provides comments/written feedback on work	Which students do you anticipate will need additional support? How will you provide it?
Independent Practice	APPLICATION Ask your students to apply the concept or skill in different contexts	– May happen within the same lesson, or in future lesson – Must occur on a repeating schedule so that the learning is not forgotten – May be homework, or individual or group work in class – Teacher makes connections – explains how this knowledge/skill can be applied/transferred to other learning contexts	What independent practice will students undertake?
Review	REVIEW Bring the lesson presentation to an appropriate conclusion by reviewing and clarifying the key points, tying them together in a coherent whole	– Reinforce major points of lesson – Students give feedback on what and how they've learned	How will you review the lesson?

4 ADOPT CONSISTENT LEARNING PROTOCOLS

THEORY OF ACTION FOR THE WHOLE SCHOOL

WHEN we adopt consistent learning protocols in all classes

THEN all students will experience an enhanced capacity to learn, and to develop skills, confidence, and curiosity.

We believe that when learning strategies, and their purposes, are clear and accessible to all our students, they are better positioned to become powerful learners.

ELABORATION

There are three primary purposes of education. We intend to help our students:

- acquire useful and important bodies of knowledge
- become powerful learners by expanding and making articulate their repertoire of learning strategies
- become fine, caring, and principled citizens.

In *The System and Powerful Learning*, one of the manuals in this series, we describe powerful learning as a learner's ability to respond to the tasks they are set, and to the tasks they set themselves. This ability comprises the capacities to:

- integrate prior and new knowledge
- acquire and use a range of learning skills
- solve problems individually and in groups
- think carefully about their successes and failures
- think critically, including evaluating conflicting evidence, and
- accept that learning involves uncertainty and difficulty.

Deploying a range of learning strategies is commonly termed meta-cognition – that is, the learner's ability to take control over their own learning processes.

SPECIFICATION

A 'learning manifesto' is a precise statement about what learning skills a school intends to foster in all its students. Creating a learning manifesto for a school involves a number of steps.

STEP 1 Develop a school policy on learning through discussion with staff, students, school governing body, and parents/guardians.

STEP 2 Identify the key learning skills you wish your students to acquire.

Give these skills a prominent place in everything the school does – see them as a student entitlement.

STEP 3 Turn the school's learning frameworks into specific learning skills students can acquire.

Prominently display in every classroom the learning frameworks and desired learning skills that your school has adopted.

STEP 4 Regularly encourage students to self-assess. Task them to reflect on their progress towards achieving mastery in the desired learning skills that your school has adopted.

EXHIBIT

THE INTERNATIONAL BACCALAUREATE

The International Baccalaureate (IB) is an internationally recognised qualification.

The IB aims to develop inquiring, knowledgeable, and caring young people who help to create a better and more peaceful world through intercultural understanding and respect.

These characteristics resonate with the seven characteristics of curiosity thinking that support learning displayed by Alice in her excursion into Wonderland. Those characteristics are described in *Curiouser and Curiouser* (page 5), one of the manuals in the Curiosity and Powerful Learning series. To recap them briefly here, students demonstrate curiosity thinking when they:

- engage with new ideas, new people, new thoughts, new things
- accept the unexpected
- set learning goals despite uncertainty
- have an optimistic belief that they can work things out, and see failure as a learning opportunity
- build on what they know already by inferring and predicting
- take time to draw in new ideas and to assemble new understanding
- persist when thinking through a problem and when confronting the unfamiliar.

PROFESSIONAL LEARNING OPPORTUNITY

Conduct a professional discussion about your school's approach to learning.

Assess the strengths and weaknesses of your school's approach by comparing it with the IB.

Are there opportunities to improve your school's approach by incorporating IB perspectives into your school's learning protocols?

EFFECT SIZE

0.69 Metacognitive activities (thinking about thinking) can include planning how to approach a given learning task, evaluating progress, and monitoring comprehension.
– Hattie, 2009.

+8 mths ★★★★ $$ Metacognitive and self-regulation approaches are usually more effective in small groups so learners can support each other and make their thinking explicit through discussion. They tend to be particularly effective with lower achieving pupils and older students.
– Education Endowment Fund Toolkit, 2014

THE IB LEARNER PROFILE

The aim of all IB programmes is to develop internationally minded people who, recognising their common humanity and shared guardianship of the planet, help to create a better and more peaceful world.

IB learners strive to be…		Are these capabilities relevant for our students? If so, are they reflected in our learning protocols?
Inquirers	– They develop their natural curiosity. – in learning. – They actively enjoy learning – this love of learning will be sustained throughout their lives.	
Knowledgeable	– They explore concepts, ideas and issues that have local and global significance. – In so doing, they acquire in-depth knowledge and develop understanding across a broad and balanced range of disciplines.	
Thinkers	– They exercise initiative. – Through applying thinking skills critically and creatively, they can recognise and approach complex problems. – They make reasoned, ethical decisions.	
Communicators	– They understand and express ideas and information confidently and creatively, in more than one language and in a variety of modes of communication. – They work effectively and willingly in collaboration with others.	
Principled	– They act with integrity and honesty, with a strong sense of fairness, justice and respect for the dignity of the individual, groups and communities. – They take responsibility for their own actions and the consequences that accompany them.	
Open-minded	– They understand and appreciate their own cultures and personal histories. – They are open to the perspectives, values and traditions of other individuals and communities. – They are accustomed to seeking and evaluating a range of points of view, and are willing to grow from the experience.	
Caring	– They show empathy, compassion and respect towards the needs and feelings of others. – They have a personal commitment to service. – They act to make a positive difference to the lives of others and to the environment.	
Risk-takers	– They approach unfamiliar situations and uncertainty with courage and forethought. – They have the independence of spirit to explore new roles, ideas and strategies. – They are brave and articulate in defending their beliefs.	
Balanced	– They understand the importance of intellectual, physical and emotional balance to achieve personal well-being for themselves and others.	
Reflective	– They give thoughtful consideration to their own learning and experience. – They are able to assess and understand their strengths and limitations in order to support their learning and personal development.	

5 HARNESS LEARNING INTENTIONS, NARRATIVE, & PACE

THEORY OF ACTION FOR TEACHERS

WHEN we harness learning intentions, narrative, and pace so students are more secure about their learning, and more willing to take risks

THEN achievement and understanding will increase and curiosity will be enhanced.

We believe that by making learning intentions and learning outcomes explicit, each student has more control over their own learning, and can contribute more effectively to learning outcomes for the whole class.

ELABORATION

We have learned two important things about our students from our experience in classrooms, not least from all the instructional rounds we have conducted. It is apparent that when we are clear about our learning intentions, our students:

- are more engaged
- feel more secure in their learning.

Great teaching links a lesson's learning intention with the learning outcome and the success criteria.

This link guides a lesson's narrative. A strong sense of narrative enables us to engage with deviation, knowing how to bring discussion back on target. Our students feel more secure about the purpose of their learning when we keep the learning outcome in view by returning to the lesson's narrative flow.

Pace matters. It keeps a lesson moving. A good pace limits openings for low level disruption.

Many schools embody this Theory of Action – harnessing learning intentions, narrative, and pace – within the Direct Instruction teaching model. This supports teachers to maintain consistency in both planning and delivery.

SPECIFICATION

A learning intention for a lesson (or series of lessons) clearly states what we intend our students will know, understand, and be able to do as a direct result of a learning and teaching activity.

A strong learning intention has three essential components: condition, action verb, and standard.

	CONDITION	ACTION VERB	STANDARD
	The conditions under which the student will perform the task	A description of what the student will be able to do	The criteria for evaluating student performance
EXAMPLES	After completing the required readings …	students will be able to construct …	an opening paragraph for a story.
	With the given set of data …	students will be able to solve …	the addition of integers.

The learning intention should also embrace the criteria for success. Success criteria are statements describing the extent to which the student has met the learning intention.

THE BENEFITS OF WELL CONSTRUCTED SUCCESS CRITERIA

Students have a clear picture of exactly how they will be assessed.

This clarity means they are in a better position to self-assess – that is, to:

- monitor their progress, and
- evaluate their constructed response.

Discussing success criteria with students offers them an explicit opportunity to articulate and extend their capacity for:

- personal planning
- planning with peers, and
- independent thinking.

Success criteria allow the teacher and student to give accurate feedback about:

- the product of their work (the performance of understanding), and
- the steps they have taken to achieve that product.

EXHIBIT

A RUBRIC FOR 'HARNESS LEARNING INTENTIONS, NARRATIVE, & PACE'

The rubric on the opposite page highlights how consistency in lesson planning and structure benefits all students. It lifts student performance, reduces in-school variation in learning outcomes, builds on students' understanding, and encourages them to demonstrate their understanding.

High impact lessons engage students in their learning and challenge them to interact with new information. For example, on page 12 of this manual we describe Fertile Questions which knit together learning activities across a sequence of lessons.

A series of science lessons on the water cycle might be introduced by this Fertile Question: 'How can we be sure our water is clean to drink?' Every lesson in the series is framed by other questions that expand student understanding about how to respond to the Fertile Question. In this instance, other questions might be: 'What makes water safe for people to drink?', and 'What diseases does water carry and how can we detect them?'

The objective of our teaching practice is to give our students a big picture that enables them to:

- set their ***learning intentions***
- understand the ***narrative*** of each lesson and to understand and plan their learning journey.

Lessons are ***paced*** to maintain tempo, avoid low-level disruptions, and allow for real time feedback.

PROFESSIONAL LEARNING OPPORTUNITY

Use the rubric on the opposite page to keep track of your observations when you participate in peer observation. After three or four peer observations, select your most significant insight and share it in your professional learning triad. Discuss with your peers how you plan to incorporate that insight into your practice over the next month.

EFFECT SIZE

2.55 Academic achievement difference between classes that used direct instruction in concepts, principles, and generalisation, and those that did not.
– Marzano, 1998.

0.93 Effect size for direct instruction which emphasises lessons that are fast paced, sequenced, and focused.
– Adams and Carnine, 2003

RUBRIC: HARNESS LEARNING INTENTIONS, NARRATIVE, & PACE

COMMENCING PRACTICE

Teacher usually sets clear learning intentions and desired outcomes.

- ☐ Most lesson plans clearly identify desired objectives.
- ☐ Objectives are shared with students when the lesson starts.
- ☐ Objectives may be referred to infrequently during the lesson.
- ☐ To engage and enthuse students, the teacher uses a range of strategies that are mostly constructed to help students achieve the objectives.
- ☐ Lesson pace is usually good, though learners occasionally lose the thread of the lesson and engage in disruptive behaviour.
- ☐ The teacher tracks student learning against the intended outcomes, and sometimes shares observations about progress and misconceptions.
- ☐ Usually students can monitor their progress and thinking against the objectives, though sometimes there is a lack of clarity about the lesson narrative, learning intentions, or connections to the big picture.

INTERMEDIATE PRACTICE

Teacher mostly sets clear learning intentions, shares an engaging narrative, and paces lessons well.

- ☐ Lesson objectives are mostly crafted so that the lesson prepares students to demonstrate their understanding of the Fertile Question and the big picture.
- ☐ A narrative is mostly created by objectives that link lessons together.
- ☐ The learning intention, outcomes, and success criteria support the lesson's narrative.
- ☐ Objectives mostly define a learning outcome.
- ☐ Pace is good and there is little deviation from the lesson narrative.
- ☐ Teacher uses a range of strategies that engage and enthuse students, and set a good pace for the lesson.
- ☐ Activities align with outcomes and are deployed at the correct time in the Teaching and Learning cycle.
- ☐ Most learners engage with the narrative and share in the lesson success.
- ☐ At times some learners disengage because the lesson is teacher intensive for long stretches.

EXPERT PRACTICE

Teacher sets clear learning intentions, and plans lessons that engage students with the lesson narrative. Students set an effective pace.

- ☐ Every aspect of the lesson is connected to the objectives.
- ☐ Every lesson builds on what students have already done and prepares them for what they need to do next.
- ☐ Clear learning intentions and success criteria mean all students know where they are going, monitor their progress, and know what to do next to make further progress.
- ☐ Feedback is used to make real-time changes in teaching, to check misconceptions, and to fill gaps in understanding.
- ☐ The lesson narrative assists all students to know what they are learning to do and why.
- ☐ Students know the aim of the Fertile Question. They identify the gaps in their thinking. They decide how to plug the gaps, and how to deepen their understanding.
- ☐ Learner thinking is monitored via student feedback.
- ☐ Students take responsibility for the pace of the lesson, with no distractions.
- ☐ Every lesson ends with the question to be addressed at the start of the next lesson.

ACCOMPLISHED PRACTICE

Teacher usually sets clear learning intentions, develops a clear narrative, and creates a lively pace.

- ☐ Every lesson is part of the big picture and every lesson question prepares students for mastery.
- ☐ Usually the narrative is maintained because the sequence of lessons prepares learners for what comes next.
- ☐ Clear learning intentions are explained and discussed with students.
- ☐ The lesson narrative connects prior learning and lesson objectives.
- ☐ Students largely self-regulate and there is little deviation from the lesson intentions.
- ☐ The learning intention for a lesson or series of lessons clearly describes what the student will know, understand, and be able to do as a result of the lesson's learning and teaching activities.
- ☐ Pace keeps the lesson lively and increasing tempo ensures there is little or no low-level disruption.
- ☐ Learning is aided by chunking the lesson into manageable and connected phases.
- ☐ Teacher and students check understanding at the end of each chunk before moving on.

6 SET CHALLENGING LEARNING TASKS

THEORY OF ACTION FOR TEACHERS

WHEN learning tasks are purposeful, clearly defined, differentiated and challenging

THEN all students will experience powerful, progressive and precise learning.

We believe curiosity is enhanced when students work at a level appropriate to their understanding.

ELABORATION

Instructional rounds have deepened our understanding of what lifts achievement. We have also built a strong sense of what isn't working. In virtually all our instructional rounds we found that most students felt the tasks that were set held little challenge. Yet it is the tasks our students do that nurture their curiosity, build their capacity for inquiry, and most importantly, predict their performance.

We must make careful distinctions. We cannot assess if a task is challenging by referring to what we *think* we have asked our students to do, nor by referring to what the prescribed curriculum says they *should* be doing. But we can assess if a task is challenging through classroom observation and discussion. We need only ask: what are our students *actually* doing, and what *sense* do they make of what they are doing?

If learning is to progress, we must set tasks within a student's Zone of Proximal Development, or ZPD. This is the margin between existing knowledge and new knowledge. It is the gap between what a learner can already do without assistance, and what they can do with assistance. That gap is where the challenge is.

We must work with the different levels of mastery in a class and differentiate the tasks we set. This usually means three or four graded tasks for each class, with sufficient scaffolding around each task to ensure success.

SPECIFICATION

Each task we set our students must contain challenges that extend metacognitive skills and their domain knowledge. An attribute of challenging learning tasks is that they attract our students to questions rather than push them towards answers. All tasks should seek to inspire and sustain curiosity and inquiry through interest and engagement.

Task scaffolding ensures that each student can work towards a successful performance of understanding.

Closely associated with scaffolding is the *gradual transfer of responsibility for managing learning*. As our students develop expertise, they assume more responsibility for regulating their own learning – they ask questions, and they work on increasingly complex tasks with increasing autonomy.

EXHIBIT

A RUBRIC FOR 'SET CHALLENGING LEARNING TASKS'

Challenge strongly influences student attitude and achievement. Learning progress relies on differentiated tasks that are within the student's ZPD. Such tasks take a student forward because they are precise and work with the student's current level of mastery. Students can demonstrate progress by, for example:

- showing what they know and applying that knowledge elsewhere
- posing counter-arguments or highlighting conflicts in their knowledge.

Good and Brophy (2008) identified six ingredients in good task scaffolding:

1. Develop student interest in accomplishing the task goal
2. Demonstrate an idealised version of the actions to be performed
3. Create task clarity by reducing the number of process steps (without simplifying the level of cognitive challenge)
4. Control frustration and risk – model the process and think with students rather than for them
5. Frame feedback about what is produced and what is required in ways that enable students to understand how to close any gaps
6. Motivate students and direct their activity so they stay in pursuit of the learning objective.

PROFESSIONAL LEARNING OPPORTUNITY

Use the rubric on the opposite page to generate an understanding of which tasks you set provide the greatest challenge for your students. With your colleagues:

- examine the task designs that are most and least challenging
- specify which task design criteria are present or absent in each design.

EFFECT SIZE

0.53 Belland, Walker, Olsen and Leary, 2012, 'determined that scaffolding positively affects student learning in STEM areas across all grade levels, from kindergarten through high school graduation.'

RUBRIC: SET CHALLENGING LEARNING TASKS

COMMENCING PRACTICE

Teacher is aware of strategies that create challenge in the classroom.

- ☐ Tasks allow many students to avoid challenge while still meeting success criteria.
- ☐ Teacher uses subject-specific language to explain concepts.
- ☐ Some students use subject-specific language to explain concepts.
- ☐ Some students are often passive and display off-task behaviour.
- ☐ A minority of students engage in higher level cognitive tasks.
- ☐ Teacher sets low level cognitive tasks that ask students to repeat, reproduce, match, or sequence.
- ☐ Students are occasionally asked to develop or apply their thinking.

INTERMEDIATE PRACTICE

Teacher uses teaching strategies that are usually matched to most students' needs.

- ☐ Most tasks set by the teacher challenge students and require them to use subject-specific language to explain concepts.
- ☐ Some students are challenged to demonstrate subject expertise.
- ☐ Occasionally the teacher mismatches challenges and students' levels of understanding. This is apparent from flagging pace, engagement, motivation.
- ☐ Students demonstrate some autonomy. They often require teacher input before deciding what they need to do to improve their performance.

ACCOMPLISHED PRACTICE

Teacher matches teaching strategies to most students' needs.

- ☐ Most tasks are differentiated and set within the ZPD for all students.
- ☐ All students demonstrate progress.
- ☐ Students are encouraged and supported to use subject-specific language to explain their thinking.
- ☐ Students are asked to perform high level cognitive tasks, such as arguing, justifying, analysing, and evaluating.
- ☐ Students demonstrate autonomy through task choice.
- ☐ Students can talk about the gap between their current performance and the desired performance.

EXPERT PRACTICE

Teacher uses well-judged and often inspirational teaching strategies. Students learn optimistically and independently.

- ☐ All tasks are precisely targeted. Each student makes greater than expected progress.
- ☐ All students understand the desired learning outcome and regulate their performance against it.
- ☐ Students are engaged by, and able to complete, tasks that require them to find contradictions or tensions in knowledge, and to expose assumptions in knowledge.
- ☐ Students know subject-specific language and use it to talk about their thinking.
- ☐ Students confidently formulate counter-knowledge and generate new knowledge.
- ☐ Students have the autonomy and expertise to monitor their learning. They ask questions and work independently on increasingly complex tasks.

7 FRAME HIGHER ORDER QUESTIONS

THEORY OF ACTION FOR TEACHERS

WHEN we systematically employ higher order questioning

THEN levels of student understanding will deepen and levels of achievement will increase.

We believe students are more likely to be curious when they are regularly asked to analyse, synthesise, and evaluate.

ELABORATION

Research tells us that questioning is the second most prevalent teaching method, after teacher talk. Most teachers spend 35-50% of their time in questioning.

Questioning has a positive impact on student learning. This effect is associated more with higher order questioning – questions which stimulate curiosity.

On the evidence, most teachers ask low level questions about knowledge and comprehension. Research suggests 60% of teacher questions seek recall of facts, and 20% are procedural. Low level questions are frequent when teachers focus mainly on knowledge acquisition.

SPECIFICATION

Bloom's taxonomy of learning objectives is widely used as a basis for structuring questions – particularly higher order questions. Bloom's classification is:

Knowledge	Recall previous material learned
Comprehension	Demonstrate understanding of facts and ideas
Application	Solve problems by applying knowledge, facts, and skills learnt in different ways and situations
Analysis	Examine information and break into parts, make connections and support ideas/arguments
Evaluation	Present judgments, recommendations, and opinions
Synthesis	Compile information in different and more creative ways and choose alternative solutions

For each of Bloom's levels, many schools generate a set of question stems that each student has access to. The question stems are often in the form of laminated cards. This is an example of a Teaching Protocol. They can also become a Learning Protocol when students use the same cards to structure questions in cooperative groups.

Most of the time, teachers can adopt the following practice:
- frame a question to the whole class
- allow your students time to think ('wait time')
- only then call on someone to respond.

This approach makes everyone responsible for generating an answer, particularly when you use simple cooperative techniques like those described on pages 28-29.

EXHIBIT

RUBRIC FOR 'FRAME HIGHER ORDER QUESTIONS'

The rubric on the opposite page has a particular emphasis on how different types of questions help students to make meaning out of information. Meaning is knowledge.

When students set about answering a question they begin to construct ideas, apply knowledge, absorb new information, and demonstrate understanding. Skillful and considered higher order questioning is a signature of outstanding teaching. Open, rich, engaging questions are a consistent feature of inquiry-led classrooms.

A school culture of inquiry relies on students and teachers maintaining a continuing cycle of asking and responding to powerful questions. Higher order questions enable students to convert information to knowledge, and move from knowledge acquisition to knowledge application.

When we learn something new we have altered our understanding of, and interaction with, our world. Learning something new involves a preparedness to enter a situation in which what we already know is up for scrutiny – we must ask and respond to questions.

PROFESSIONAL LEARNING OPPORTUNITY

Ask your colleagues to track, through peer observation:
- the frequency with which you use low order and high order questions
- how much wait time you leave between questions and student responses
- the extent to which your questions focus on a lesson's learning intention.

With your colleagues, determine how to improve your questioning strategies and technique. You may wish to review pages 10-13 of *Curiouser and Curiouser* (one of the manuals in the Curiosity and Powerful Learning series) where the power of good questions and the importance of wait time are explored.

EFFECT SIZE

1.16 The difference in achievement between classes that use deductive strategies designed to help students apply their knowledge of concepts, principles, and generalisations, and those that do not.
– Marzano, 1998.

0.46 Effect size of teachers using higher order questioning.
– Hattie, 2009.

RUBRIC: FRAME HIGHER ORDER QUESTIONS

COMMENCING PRACTICE

Teacher often asks questions that require students to repeat information.

- ☐ Most teacher questions are low order, relating to task compliance, knowledge acquisition, and comprehension.
- ☐ Some questions are directed at developing thinking skills and knowledge application.
- ☐ Response to student answers is often 'yes', 'no', or praise for correct answers rather than praise for effort and thinking strategy.
- ☐ Student responses occasionally inform pace and direction of a lesson, and occasionally develop a lesson's narrative.
- ☐ Teacher asks around one question a minute, and frequency produces low engagement.
- ☐ Teacher may ask questions to manage off-task behaviour.

INTERMEDIATE PRACTICE

Teacher often asks questions that allow students to demonstrate their thinking.

- ☐ The ratio of low order and high order questions is about 50/50.
- ☐ Most teacher questions are referenced to the Fertile Question, the learning intention, and task objectives. Some questions are not referenced and students and teacher may lose sight of the lesson's narrative.
- ☐ Responses are not always well acknowledged or validated.
- ☐ Teacher uses questioning to tease out evidence of student thinking.
- ☐ Teacher sometimes asks volunteers to answer a question, enabling some students to take a back seat or to disengage.
- ☐ Teacher uses questioning that encourages discussion, such as wait time.

EXPERT PRACTICE

Teacher uses questions skillfully to check understanding, and uses student responses to intervene in ways that have a noticeable impact on learning.

- ☐ Teacher drives learning through questioning technique.
- ☐ Teacher poses big, fundamental questions that require students to apply their knowledge and to think in complex ways.
- ☐ Questions are used to focus attention on the learning intention and the lesson narrative.
- ☐ Student responses and student questions directly influence the lesson's pace and direction.
- ☐ Teacher asks only a few, powerful questions and student responses demonstrate their grasp of how these powerful questions connect to the purpose of the lesson.
- ☐ Students are supported to close knowledge gaps by creating multiple draft responses to questions, seeking feedback, and clarifying learning intention and task objective.

ACCOMPLISHED PRACTICE

Teacher usually asks questions that assist teacher and students to revise tasks and review explanations in ways that improve learning.

- ☐ Teacher uses strategies to ensure students demonstrate thinking skills in their answers.
- ☐ Teacher uses student responses and student questions to control the direction of the lesson.
- ☐ Teacher uses high order questions to identify and address misconceptions and gaps in understanding.
- ☐ Teacher uses questions to determine how ready students are to move more deeply into an idea, and to judge the pace of escalation and the level of complexity.
- ☐ Students are encouraged to respond to questions with analysis and explanation.
- ☐ Teacher uses questioning strategies that focus students on their responsibility to think carefully about their responses.

8 CONNECT FEEDBACK TO DATA

THEORY OF ACTION FOR TEACHERS

WHEN we connect feedback to data about student actions and performances

THEN behaviour will be more positive, progress will accelerate, and curiosity will be enhanced.

We believe that feedback based in evidence supports our students to develop independence as learners. It directs and focuses their learning. Feedback magnifies the application of our teaching expertise.

ELABORATION

Feedback has a compelling influence on student achievement. In *Visible Learning*, John Hattie documents the evidence for its impact, and offers this powerful insight:

> The mistake I was making was seeing feedback as something *teachers provided to students* – they typically did not, although they made claims that they did it all the time, and most of the feedback they did provide was social and behavioural. It was only when I discovered that feedback was most powerful when it is from the *student to the teacher* that I started to understand it better. When teachers seek, or are at least open to, feedback from students as to what students know, what they understand, where they make errors, when they have misconceptions, when they are not engaged – then teaching and learning can be synchronized and powerful. Feedback to teachers helps make learning visible.

SPECIFICATION

There are two kinds of data and feedback on student performance: behavioural and academic.

Behavioural feedback and data helps students recognise the link between effort and outcome. Teachers provide behavioural feedback in many ways including:

- focusing student attention on mastery
- modelling skill development as incremental and domain specific
- portraying effort as an investment rather than a risk.

Academic performance data and feedback helps teachers and students when it:

- consolidates relevant data about a student
- makes analysis of student performance more exact.

Academic performance data is efficient if teachers know how to store it and access it. It is valuable if teachers know how to interpret it as part of an evidence-based approach to teaching and learning. Activating an evidence-based approach relies on our familiarity with a developmental learning framework. This framework assists us to assess when to intervene so that we can act in precise ways to advance student learning.

EXHIBIT

A RUBRIC FOR 'CONNECT FEEDBACK TO DATA'

Effective feedback is vital for powerful learning. It is focused on performance and solely concerned with helping students close gaps in their knowledge. Effective feedback:

- recognises and reinforces success and high quality work
- gives specific suggestions about how to modify and improve work that does not meet the success criteria for a constructed response.

Through experience and reflection, teachers hone their skills in giving feedback to students, and eliciting and using feedback from students. The rubric on the opposite page maps the evolution of feedback skills, including a teacher's growing capability to sharpen and deploy their students' feedback skills.

The main purpose of feedback is to reduce discrepancies between a learning intention and current understanding, behaviours, and performance. Feedback is effective when students:

- can monitor the quality of their work as they produce it
- know what high quality work is and how their work compares.

PROFESSIONAL LEARNING OPPORTUNITY

Select a class where the range of student performance is wide. After a lesson with that class make careful notes about your response to this question:

- What were my students saying or doing that could influence my planning for the next lesson?

Make adjustments to your next lesson plan based on your notes. Discuss the adjustments with the class at the beginning of the next lesson.

EFFECT SIZE

0.73 Effect size of feedback. Hattie notes that 'it is closing the gap between where the student is and where they are aiming to be that leads to the power of feedback.'
– Hattie, 2009.

+8 mths
★★★
$$

By aligning effort and activity with an outcome, feedback redirects or refocuses the teacher's or the learner's actions to achieve a goal. It can be about the learning activity, the process of activity, student management of their learning or self-regulation, or (least effective) about them as individuals. High impact for low cost, based on moderate evidence.
– Education Endowment Fund *Toolkit*, 2014

RUBRIC: CONNECT FEEDBACK TO DATA

COMMENCING PRACTICE

Teacher uses assessment data to provide general feedback to students about whether their constructed responses meet expectations.

- ☐ Students rarely have the opportunity to reflect on feedback and improve their work before assessments are submitted.
- ☐ Feedback is mostly one way, from teacher to student.
- ☐ Students rely on the teacher for feedback and for prescribing the next steps required.
- ☐ Feedback sometimes orientates students within the learning narrative.
- ☐ Students are mostly passive learners – they have occasional opportunities to take control of the learning process.
- ☐ Teacher occasionally engages students in discussion about the link between effort and success.

INTERMEDIATE PRACTICE

Teacher uses assessment data to provide general feedback to students about how well their constructed response met expectations.

- ☐ Criterion referenced feedback is used for some assessment tasks.
- ☐ Time is usually built into the lesson following the assessment or drafting for students to reflect on feedback.
- ☐ Teacher talks with students about the link between effort and achievement and helps students to recognise that progress is incremental.
- ☐ Teacher-student relationship mostly reflects a master-novice model and occasionally reflects an expert-apprentice model.
- ☐ Teacher often engages students in discussion about the link between effort and success.
- ☐ Teacher sometimes discusses with students that improvement is incremental.

EXPERT PRACTICE

Teacher always uses assessment data to provide specific feedback to students about how to improve their constructed responses.

- ☐ Students reflect on gaps in their approach and modify later drafts.
- ☐ Time is always built into the lesson following the assessment for students to reflect on feedback.
- ☐ As peers, students seek and provide task- and knowledge-specific feedback.
- ☐ Students evaluate their work as they produce it, reviewing it against success criteria and a model constructed response.
- ☐ Students connect effort and achievement and see effort as an investment rather than a risk.
- ☐ Teacher elicits feedback from students about their current thinking to inform lesson planning and readiness for assessment.
- ☐ Teacher focuses on mastery, modeling, and discussing skill development as incremental and subject specific.

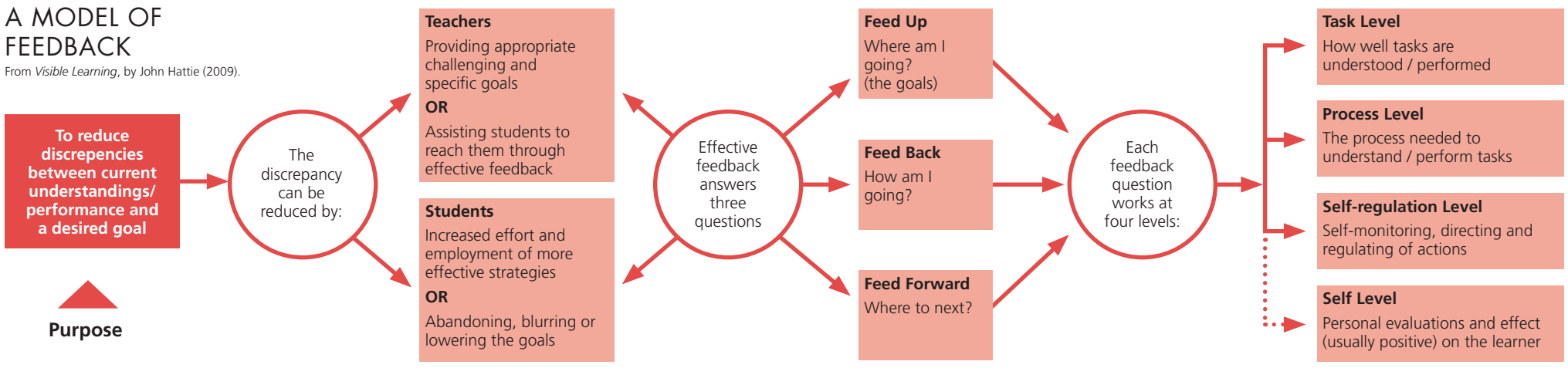
ACCOMPLISHED PRACTICE

Teacher usually uses assessment data to provide specific feedback to students about how to improve their constructed responses.

- ☐ Criterion referenced feedback is used effectively for most assessment tasks.
- ☐ Time is always built into the lesson following the assessment for students to reflect on feedback.
- ☐ Students act on a belief that learning is a process, and that knowledge can be developed and contested. They connect effort and achievement.
- ☐ Teacher elicits feedback from students about their current thinking to inform lesson planning.
- ☐ Feedback is two-way – teacher and students are learning at the same time about student thinking, misconceptions, and knowledge gaps.
- ☐ Teacher plans opportunities for students to seek and provide task- and knowledge-specific feedback from each other.

A MODEL OF FEEDBACK

From *Visible Learning*, by John Hattie (2009).



9 COMMIT TO ASSESSMENT FOR LEARNING

THEORY OF ACTION FOR TEACHERS

WHEN we commit to peer assessment, and assessment for learning

THEN student engagement, learning, and achievement will accelerate.

We believe curiosity is enhanced as the depth of student understanding increases.

ELABORATION

Assessment for learning, or formative assessment, occurs when we seek out, and interpret, evidence that helps us and our students to understand:

- where they are in their learning
- where they need to go next
- how best to get there.

Assessment for learning takes many forms, but the underpinning principles are constant:

- we collect clear evidence that informs us about how to lift *individual* attainment
- we offer clear feedback to, and seek clear feedback from, our students – this means we can be precise about what each student needs to improve, and how best to get there
- our students know what grades/levels they are working at, and they have transparent criteria that enable peer coaching
- we maintain an evidence-based link between student learning and lesson planning.

SPECIFICATION

Assessment for learning is a powerful strategy for improving student performance. Practices that characterise formative assessment are:

- sustaining classroom cultures that encourage interaction and use of assessment tools
- establishing learning goals and tracking individual student progress
- consciously varying instruction methods to meet diverse student needs
- employing multiple approaches to assess student understanding
- providing feedback on student performance and adapting instruction to meet identified needs
- active student involvement in the learning process.

Teachers deepen their understanding of how students learn so they can help them to:

- reflect on how to learn
- develop learning strategies and apply them in different circumstances
- engage in high quality classroom dialogue with the teacher, other adults and their peers. High quality dialogue supports them to develop as learners who are effective, resilient, confident, and independent.

EXHIBIT

A RUBRIC FOR 'COMMIT TO ASSESSMENT FOR LEARNING'

Three processes are involved in ensuring that assessment raises student achievement. We must:

- establish where the learners are going
- establish where they currently are in their learning, and
- work out what learners need to do next so they can move forward.

Assessment for learning asks teachers to:

- seek feedback and data from students through observing and listening to students at work, and through reflecting on their constructed responses
- use feedback and data as a direct influence on lesson design, both in real time and over the long term
- use assessment to improve learning and develop learner autonomy.

There are two models of formative assessment and teachers need to plan the use of both over time and across units of work:

- Convergent Formative Assessment
- Divergent Formative Assessment.

These models are further described beneath the rubric on the opposite page.

PROFESSIONAL LEARNING OPPORTUNITY

With your colleagues, use the rubric and models of convergent and divergent formative assessment to:

- identify elements of Assessment for Learning that you could all implement consistently in your classes
- incorporate those elements in your lesson planning
- evaluate the impact of the chosen elements on lesson pace, student engagement, and student achievement.

EFFECT SIZE

0.92 Effect size for studies where teachers worked to set rules about reviews of the data and actions to follow.
– William, 2011

0.76 Achievement increases when students receive feedback in spoken form and in written form as formative assessment.
– Beesley and Apthorp, 2010.

RUBRIC: COMMIT TO ASSESSMENT FOR LEARNING (AFL)

COMMENCING PRACTICE

Teacher gathers evidence through feedback and mostly uses it after a lesson to assess the progress students are making in their thinking.

- ☐ Teacher occasionally uses AfL strategies to elicit evidence of student thinking.
- ☐ Teacher occasionally uses evidence gathered through feedback to assist lesson planning and delivery.
- ☐ Teacher often sticks closely to a lesson plan even if students are not keeping up or are venturing down a different pathway.
- ☐ Teacher sometimes defines success vaguely so that students are unable to grasp where they are on their learning journey and where they are trying to get to.
- ☐ Teacher sometimes is unclear about the link between tasks, learning intentions, and the Fertile Question – consequently, students experience difficulty in peer review and group learning activities.

INTERMEDIATE PRACTICE

Teacher checks understanding several times a lesson, and if necessary, recaps ideas before moving on.

- ☐ Teacher clearly describes what success looks like for each learning task and activity.
- ☐ Teacher often uses AfL strategies to elicit clear evidence of student thinking.
- ☐ Teacher often uses evidence gathered through feedback to assist lesson planning and delivery.
- ☐ Teacher uses feedback from students to ensure most students achieve success, and to keep the class on track.
- ☐ Students know where they are in their learning journey, and what the learning intention is for the lesson.
- ☐ Teacher is sometimes unclear about strategies students can use to make progress in their thinking or on a learning task.
- ☐ Teacher provides supported opportunities for peer review.

EXPERT PRACTICE

Teacher constantly uses a range of assessment strategies to connect current learning to the big picture.

- ☐ Students actively maintain a classroom ethos in which students are a resource for one another.
- ☐ Students can explain where they are going, describe their current performance, and identify what they need to do next to keep making progress.
- ☐ Students know how to review one another's work and how to construct appropriate, helpful feedback.
- ☐ Students share an understanding of the model of mastery they are working towards and constantly review their progress against it.
- ☐ Peer feedback is connected to the model of expertise students are working towards.
- ☐ Teacher ensures all students have multiple opportunities for drafting and re-drafting their constructed responses.

ACCOMPLISHED PRACTICE

The teacher carefully plans for and uses various AfL strategies many times in a lesson and across a series of lessons.

- ☐ Teacher actively cultivates a classroom ethos in which students are a resource for one another.
- ☐ Students are familiar with their role as peer reviewers.
- ☐ Before moving on, teacher elicits feedback to ensure that understanding is consolidated.
- ☐ All students know where they are going and what they need to do next to keep making progress.
- ☐ Teacher uses AfL systematically to develop increased learner autonomy and metacognition.
- ☐ Teacher uses feedback from students to inform lesson planning.
- ☐ Teacher uses feedback from students to alter lesson plans in real time.
- ☐ Students set short-term task completion goals to achieve the overall learning goal for the Fertile Question.

CONVERGENT AND DIVERGENT FORMATIVE ASSESSMENT

(Pryor and Crossouard, 2007)

MODEL	PURPOSE	CHARACTERISTICS	
Convergent Formative Assessment	To discover ***if*** the learner knows, understands, or can do a predetermined thing	– Precise planning by the teacher and an intention to stick to it – Recording via checklists and can-do statements – Closed or open teacher questioning and tasks	– A focus on contrasting errors with correct responses – Authoritative, judgemental, or quantitative feedback – Feedback focused on performance and successfully completing a task
Divergent Formative Assessment	To discover ***what*** the learner knows, understands, or can do.	– Flexible planning or complex planning which incorporates alternatives – Open forms of recording (such as narrative and quotations) – Primarily open tasks with questioning by teachers and learners directed at 'helping' rather than testing	– Focus on miscues (aspects of learners' work which yield insights into their current understanding) and on prompting metacognition – Exploratory, provisional, or provocative feedback that prompts learner engagement

10 IMPLEMENT COOPERATIVE GROUPS

THEORY OF ACTION FOR TEACHERS

WHEN we implement cooperative group structures and techniques to mediate between whole class instruction and students carrying out tasks

THEN the academic performance of the whole class will increase.

We believe curiosity develops when students learn from each other in a structured manner. We believe that when cooperative learning is present in a class, a spirit of collaboration and mutual responsibility will be apparent.

ELABORATION

Working in cooperative groups is a powerful way to raise learning achievement. It develops social and academic skills by encouraging collaborative behaviour and active participation in learning.

Cooperative group work is a flexible teaching strategy. It integrates into one powerful teaching tool a range of methods: individual research, collaborative inquiry, and plenary activities. It is commonly used in Direct Instruction and many other teaching models, both as part of teacher instruction and for structuring group activities. We can also use cooperative groups to structure a whole lesson or a series of lessons.

Cooperative group work requires our students to practice and refine negotiating, organising, and communication skills. It asks them to define issues and problems. It asks them to develop ways of solving problems, including collecting and interpreting evidence, hypothesising, testing, and re-evaluating.

SPECIFICATION

We apply five principles when using cooperative group work.

Positive interdependence	For the group to succeed, all students in the group must succeed
Individual accountability	Every group member is responsible for demonstrating accomplishment of the learning
Face-to-face interaction	Continued progress is promoted through group members being in close proximity, and entering into dialogue with each other
Developing social skills	Cooperative group work enhances communication, trust, leadership, decision making, and conflict management
Processing	Group members assess their collaborative efforts and set shared targets

Models of Practice manuals in the Curiosity and Powerful Learning series describe several cooperative group structures, including:

Numbered Heads	Group members are motivated to share information and ensure everyone knows the answer
Jigsaw	Home groups become expert on a topic and teach other groups
Listening Triads	Students alternate roles of Talker, Questioner, and Recorder
Two-to-fours	Students work in pairs on a task and share what they have achieved with another pair

EXHIBIT

A RUBRIC FOR 'IMPLEMENT COOPERATIVE GROUPS'

Small group work is familiar in most classrooms. So familiar sometimes we gloss over the potential of structured group work. The rubric opposite delves into groups, exploring how teachers can tap that potential. The rubric encourages teachers to manage cooperative groups with a particular emphasis – to ensure they are outstanding forums for learning.

Cooperative group work raises student achievement because it:

- harnesses collective action
- combines the dynamics of democratic processes with academic inquiry
- encourages active participation in learning and collaborative behaviour by developing social and academic skills
- requires students to practice and refine negotiation, organisation, and communication skills
- stimulates students to define issues and problems
- challenges students to develop ways of solving them, including collecting and interpreting evidence, hypothesising, testing, and re-evaluating.

Cooperative groups offer teachers the flexibility to conduct more subtle and complex learning strategies that achieve a number of learning goals simultaneously.

PROFESSIONAL LEARNING OPPORTUNITY

Use the rubric to situate your teaching in mixed ability groups. With colleagues, investigate how cooperative group structures are used in your school to maximise learning for every student in mixed ability groups. Consider the kinds of rules, roles, and structured tasks that are employed.

Write a practical goal for planning lessons over the next five weeks that use mixed ability cooperative group structures.

EFFECT SIZE

0.58 -0.70 Effect size for cooperative learning in comparison to competitive and individualistic learning ranges from 0.58 to 0.70.
– Johnson and Johnson, 2002.

+5 mths ★★★★ $ Collaborative or cooperative learning appears to work well for all ages if activities are suitably structured for learners' capabilities. Positive evidence has been found across the curriculum.
– Education Endowment Fund *Toolkit*, 2014

RUBRIC: IMPLEMENT COOPERATIVE GROUPS

COMMENCING PRACTICE

Teacher plans and implements cooperative group structures.

- ☐ Teacher is working towards a good match between group structures, challenging tasks, and learning intention.
- ☐ Tasks allocated to group work are usually problem solving tasks that require group work rather than individual work.
- ☐ Teacher usually plans group work activities that ensure students work together.
- ☐ Teacher usually sets ground rules to enhance cooperation in groups and monitors compliance with the rules.
- ☐ Teacher occasionally has difficulty in determining which grouping of students is best suited to the task.

INTERMEDIATE PRACTICE

Teacher plans and effectively implements cooperative group structures.

- ☐ Teacher usually has a coherent plan that matches cooperative group work with the learning intention.
- ☐ The cooperative structure and task usually model effectively to students how experts in that subject or field think and act to achieve a desired outcome.
- ☐ The structure of group work tasks usually requires students to explain their thinking and communicate their resolutions to the problem.
- ☐ Teacher usually plans activities that ensure students work together so that all learn.
- ☐ Teacher usually uses small groups of three, and only uses groups of five or more for specific purposes.
- ☐ Teacher decides whether mixed ability or settled groups are required, depending on the task.
- ☐ Teacher usually sets clear ground rules to enhance cooperation in groups.

EXPERT PRACTICE

Teacher and students decide when to use cooperative group structures to best enable successful learning.

- ☐ Teacher and students collaborate to determine and direct learning tasks that are best managed in a cooperative group structure.
- ☐ Students are orientated in the learning narrative and know what the problem is that they are trying to solve.
- ☐ Teacher uses cooperative structures as a tool that enables students to develop more sophisticated levels of thinking once they have collected and interpreted the data needed to solve the problem.
- ☐ Students in each group can answer the following questions:
  - Where am I going?
  - How am I doing?
  - What do I need to do next?
- ☐ Students know why and how working in small groups helps develop more sophisticated responses to a question, and when working in a group adds little value.
- ☐ Teacher offers professional learning for colleagues on using cooperative structures, and how to develop learner autonomy through group work.

ACCOMPLISHED PRACTICE

Teacher uses cooperative group structures at the right time and matches them to students' needs.

- ☐ Teacher plans effectively so that cooperative group structures enable students to make rapid progress in their understanding.
- ☐ Teacher creates a context for learning that supports diverse learning abilities within the activity.
- ☐ Group work is used at the right time in the learning cycle to build on prior learning and prepare students for future learning.
- ☐ Teacher uses cooperative group work to enable students to talk through their current thinking using everyday language.
- ☐ Teacher always plans activities that ensure students work together so that all learn.
- ☐ Teacher always sets clear ground rules to enhance cooperation in groups and encourages students to monitor the group's compliance with the rules.

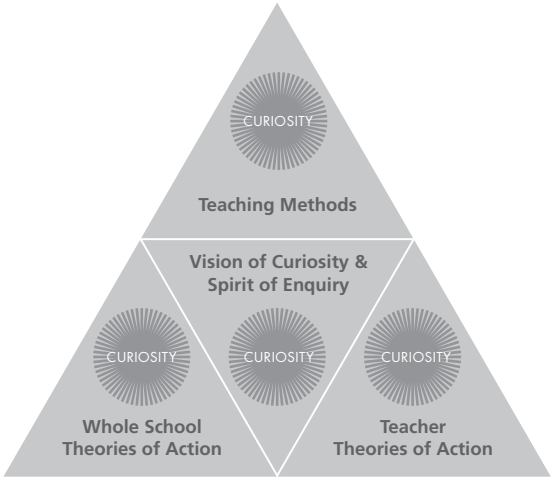
THEORIES OF ACTION AS MODELS OF PRACTICE

The ten Theories of Action examined in this manual, and their accompanying exhibits, serve to guide and promote both curiosity and achievement. They are the basic building blocks of effective instruction – the foundation for the next phase of pedagogical improvement. Taken together, the ten Theories of Action offer the potential to create and maintain a new instructional culture of teaching and learning within our schools.

We must remind ourselves that the Theories of Action are simply tools teachers use to enhance their students' curiosity and learning. The six Theories of Action for the Teacher are steps in the journey of professional development and discovery. There are no ceilings to the performance of great teaching practice.

Models of practice are also models of learning. How we teach has a large impact on our students' abilities to educate themselves. And no child should leave school without the ability to operate as an independent, lifelong learner.

Over time it is the interaction of the Whole School Theories of Action with the Theories of Action for Teachers that create the vision of curiosity and culture of inquiry in the school. These mutually reinforcing interactions are the foundation for going further with teaching and learning by exploring the models of practice.



All our experience tells us that without the Theories of Action in place, work on more complex models of practice inevitably falls short.

MODELS OF PRACTICE – OPENING A NEW TOOLBOX

When the Theories of Action are in place we are ready to open a new toolbox. We begin to use models of practice. In essence, and perhaps more importantly, they are actually models for learning that simultaneously define:

- the nature of the content
- the learning strategies
- social interaction arrangements that create our students' learning contexts.

Powerful classrooms employ an array of models of practice. The models listed below are explored in detail in the *Models of Practice* manuals that are part of the Curiosity and Powerful Learning series.

Using this model…	students learn how to…
WHOLE CLASS TEACHING MODEL	Extract information and ideas from lectures and presentations
CO-OPERATIVE LEARNING MODEL	Work effectively with others to carry out cooperative tasks
INDUCTIVE TEACHING MODEL	Build hypotheses and theories
MNEMONICS MODEL	Memorise information
CONCEPT ATTAINMENT MODEL	Attain concepts and invent concepts
SYNECTICS MODEL	Use metaphors to think creatively

NEXT STEPS IN DEEPENING OUR PROFESSIONAL PRACTICE

Detailed understanding and confident management of varied models of practice puts in our grasp teaching tools that bring about substantial change in the way learning happens in our classrooms. Bruce Joyce and his colleagues have explained the benefits that flow from this kind of expanded professional repertoire:

> *Through the selection of appropriate models, content can become conceptual rather than particular, the process can become constructive inquiry instead of passive reception, and the social environment can become expansive not restrictive. Our choices depend on the range of our active teaching repertoire and our efforts to expand it by developing new models and studying those developed by others.*

These are strategic outcomes. By skillfully using models of practice that integrate content, process, and social climate we can more adroitly organise and personalise student learning.

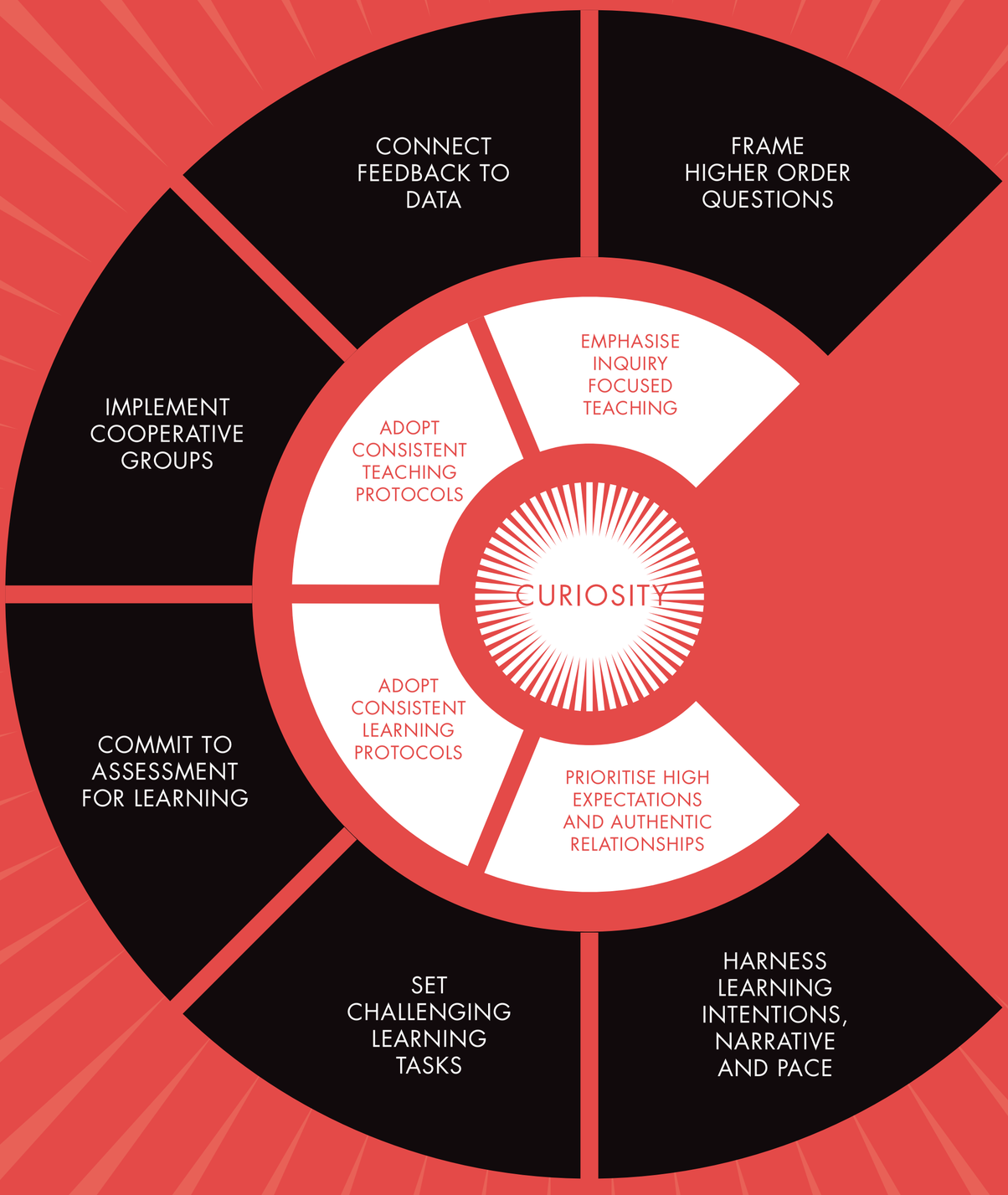
Using models of practice skilfully calls for precision in applying them. Precision emerges from frequent use – over time we internalise the purposes and operational details, and the practice becomes second nature. But the practice must never become secondhand. Reflection and ongoing, practice-based professional development is essential for deepening our awareness of the models of practice, and for keeping them lively in classroom contexts.

Establishing powerful learning as a recognised attribute in a school is steady, professionally exacting work which the manuals in this series describe in tangible ways. *The System and Powerful Learning* considers how the wider resources of school networks and systems can be organised and drawn upon. *Leadership for Powerful Learning* unpacks the work school leaders need to do so that the school culture and values provide an environment for successfully enacting the Theories of Action described in this manual.

The next step for schools and teachers is to press home the advantage of whole school changes in culture and values by building capability in reliable and precise professional practice. That is the province of the *Models of Practice* manuals which explore carefully structured approaches to teaching that turn our students' curiosity into a formidable and inexhaustible resource for learning and life.

tear-out poster

CURIOSITY AND POWERFUL LEARNING



McREL INTERNATIONAL

SELF ASSESSMENT AGAINST THE THEORIES OF ACTION

Completing the tables below provides data for planning a sequence of professional learning activities that support your school to implement the ten Theories of Action in this manual.

FOUR THEORIES OF ACTION FOR THE WHOLE SCHOOL

THEORIES OF ACTION	No systematic whole school adoption	Limited, unsystematic whole school adoption	Some systematic whole school adoption & review	Systematic whole school adoption & review	WHAT IS THE EVIDENCE?
PRIORITISE HIGH EXPECTATIONS & AUTHENTIC RELATIONSHIPS **WHEN** schools & teachers prioritise high expectations & authentic relationships **THEN** curiosity will flourish.					
EMPHASISE INQUIRY FOCUSED TEACHING **WHEN** inquiry is a defining characteristic of a school's culture **THEN** the level of student achievement & curiosity will increase.					
ADOPT CONSISTENT TEACHING PROTOCOLS **WHEN** we adopt consistent teaching protocols **THEN** student behaviour, engagement, learning & curiosity will be enhanced.					
ADOPT CONSISTENT LEARNING PROTOCOLS **WHEN** we adopt consistent learning protocols in all classes **THEN** all students will experience an enhanced capacity to learn, & to develop skills, confidence, & curiosity.					

SIX THEORIES OF ACTION FOR THE TEACHER

THEORIES OF ACTION	Few teachers know, use & review this practice	Some teachers know, use & review this practice	Most teachers know, use & review this practice	All teachers know, use & review this practice	WHAT IS THE EVIDENCE?
HARNESS LEARNING INTENTIONS, NARRATIVE, & PACE **WHEN** we harness learning intentions, narrative, & pace so students are more secure about their learning, & more willing to take risks **THEN** achievement & understanding will increase & curiosity will be enhanced.					
SET CHALLENGING LEARNING TASKS **WHEN** learning tasks are purposeful, clearly defined, differentiated & challenging **THEN** all students will experience powerful, progressive & precise learning.					
FRAME HIGHER ORDER QUESTIONS **WHEN** we systematically employ higher order questioning **THEN** levels of student understanding will deepen & levels of achievement will increase.					
CONNECT FEEDBACK TO DATA **WHEN** we connect feedback to data about student actions & performances **THEN** behaviour will be more positive, progress will accelerate, & curiosity will be enhanced.					
COMMIT TO ASSESSMENT FOR LEARNING **WHEN** we commit to peer assessment, & assessment for learning **THEN** student engagement, learning, & achievement will accelerate.					
IMPLEMENT COOPERATIVE GROUPS **WHEN** we implement cooperative group structures & techniques to mediate between whole class instruction & students carrying out tasks **THEN** the academic performance of the whole class will increase.					

REFERENCES

THEORIES OF ACTION – *page 4*

City EA, Elmore RF, Fiarman SE and Teitel L, 2009, *Instructional Rounds in Education*, Cambridge, Massachusetts: Harvard Education Press, page 3.

THE EVIDENCE FOR OUR THEORIES OF ACTION – *page 7*

Effect sizes:

– Education Endowment Fund, 2014, *Sutton Trust-Education Endowment Fund Teaching and Learning Toolkit*. The Toolkit is available in an interactive online format, or as a downloadable pdf, from http://educationendowmentfoundation.org.uk/toolkit/about-the-toolkit/

– Hattie J, 2009, *Visible Learning*, Oxford, UK: Routledge.

PRIORITISE HIGH EXPECTATIONS & AUTHENTIC RELATIONSHIPS – *pages 10 and 11*

Teacher expectation effects:

– Good T and Brophy J, 2008, *Looking in Classrooms* (Tenth edition), Boston, MA: Allyn and Bacon.

Effect sizes:

– Hattie J, 2009, *Visible Learning*, Oxford, UK: Routledge.

– Robinson, VMJ, Lloyd C and Rowe KJ, 2008, 'The impact of leadership on student outcomes: An analysis of the differential effects of leadership type', *Educational Administration Quarterly*, 44(5), 635-674. Cited in H Timperley, 2011, *A background paper to inform the development of a national professional development framework for teachers and school leaders*, Melbourne: Australian Institute for Teaching and School Leadership.

EMPHASISE INQUIRY FOCUSED TEACHING – *pages 12 and 13*

Definition of the practice of teaching and learning:

– Joyce BR, Calhoun EF and Hopkins D, 2009, *Models of Learning, Tools for Teaching* (Third edition), Maidenhead, Berks, UK: Open University Press/McGraw-Hill Education.

Fertile Questions:

– Harpaz Y, 2005, 'Teaching and learning in a community of thinking', *Journal of Curriculum and Supervision*, 20(2), pages 136-157. Download the full article at http://yoramharpaz.com/pubs/en_learning/teaching-learning.pdf

Effect sizes:

– Beesley, AD and Apthorp HS, 2010, *Classroom instruction that works*, Denver, CO: McREL.

– Marzano RJ, 1998, *A theory-based meta-analysis*, Aurora, CO: McREL.

ADOPT CONSISTENT TEACHING PROTOCOLS – *pages 14 and 15*

Effect size:

– Beesley, AD and Apthorp HS, 2010, *Classroom instruction that works*, Denver, CO: McREL.

ADOPT CONSISTENT LEARNING PROTOCOLS – *pages 16 and 17*

The work of Bruce Joyce has been highly influential in developing the concept of a model of teaching. Useful references include:

– Joyce BR and Weil M, 2008, *Models of Teaching* (Eighth edition), Englewood Cliffs, NJ: Prentice-Hall.

– Joyce BR, Calhoun EF and Hopkins D, 2009, *Models of Learning – Tools for Teaching* (Third edition), Maidenhead, Berks, UK: Open University Press/McGraw-Hill Education.

– Hopkins D, Harris A, Singleton C and Watts R, 2000, *Creating the Conditions for Teaching and Learning. A Handbook of Staff Development Activities*, London: David Fulton Publishers.

Effect sizes:

– Education Endowment Fund, 2014, *Sutton Trust-Education Endowment Fund Teaching and Learning Toolkit*. The Toolkit is available in an interactive online format, or as a downloadable pdf, from http://educationendowmentfoundation.org.uk/toolkit/about-the-toolkit/

– Hattie, J., 2009, *Visible Learning*, Oxford, UK: Routledge.

HARNESS LEARNING INTENTIONS, NARRATIVE & PACE – *pages 18 and 19*

Effect sizes:

– Adams G and Carnine D, 2003, 'Direct Instruction'. In HL Swanson, KR Harris and S Graham (Eds), *Handbook of Learning Disabilities*, pp. 403-416.

– Marzano, RJ, 1998, *A theory-based meta-analysis*, Aurora, CO: McREL.

SET CHALLENGING LEARNING TASKS – *pages 20 and 21*

Good T and Brophy J, 2008, *Looking in Classrooms* (Tenth edition), Boston, MA: Allyn and Bacon:

– six components providing scaffolding students need to carry out tasks effectively, p. 343

– gradual transfer of responsibility for managing learning, p. 344.

Effect size:

– Belland B, Walker A, Olsen M and Leary H, 2012, 'Impact of scaffolding characteristics and study quality on learner outcomes': paper presented to 2012 Annual Meeting of the American Educational Research Association, Vancouver, Canada. Cited in SP Rollins, 2014, *Fast Lane: 8 ways to put all students on the road to academic success*, Alexandria, VA: ASCD.

FRAME HIGHER ORDER QUESTIONS – *pages 22-23*

Research tells us questioning is the second most prevalent teaching method, after teacher talk, and that 60% of questions recall facts and 20% are procedural:

– Hattie J, 2009, *Visible Learning*, Oxford, UK: Routledge, p. 182.

Bloom's Taxonomy:

– Anderson L and Kratwohl D (Eds) (2001). *A Taxonomy for Learning, Teaching, and Assessing – A Revision of Bloom's Taxonomy of Educational Objectives*, Addison Wesley Longman, Inc.

Questioning Techniques Observation Scale:

– Good T and Brophy J, 2008, *Looking in Classrooms* (Tenth edition), Boston, MA: Allyn and Bacon, p. 334.

Effect sizes:

– Hattie J, 2009, *Visible Learning*, Oxford, UK: Routledge.

– Marzano RJ, 1998, *A theory-based meta-analysis*, Aurora, CO: McREL.

CONNECT FEEDBACK TO DATA – *pages 24-25*

John Hattie's insight about what makes feedback powerful:

– Hattie J, 2009, *Visible Learning*, Oxford, UK: Routledge, p. 173.

Effect sizes:

– Education Endowment Fund, 2014, *Sutton Trust-Education Endowment Fund Teaching and Learning Toolkit*. The Toolkit is available in an interactive online format, or as a downloadable pdf, from http://educationendowmentfoundation.org.uk/toolkit/about-the-toolkit/

– Hattie J, 2009, *Visible Learning*, Oxford, UK: Routledge.

COMMIT TO ASSESSMENT FOR LEARNING – *pages 26-27*

Effect sizes:

– Beesley, AD and Apthorp HS, 2010, *Classroom instruction that works*, Denver, CO: McREL.

– William D, 2011, 'What is assessment for learning', *Studies in Educational Evaluation*, 37, pages 3-14. Download the full article at http://www.udir.no/PageFiles/Vurdering%20for%20laring/Dokumenter/Bibliotek/2/What%20is%20assessment%20for%20learning%5B1%5D.pdf

Convergent and Divergent Formative Assessment:

– Pryor J and Crossouard B, 2007, 'A socio-cultural theorisation of formative assessment', *Oxford Review of Education*, 34(1), pages 1-20.

IMPLEMENT COOPERATIVE GROUPS – *pages 28-29*

Effect sizes:

– Education Endowment Fund, 2014, *Sutton Trust-Education Endowment Fund Teaching and Learning Toolkit*. The Toolkit is available in an interactive online format, or as a downloadable pdf, from http://educationendowmentfoundation.org.uk/toolkit/about-the-toolkit/

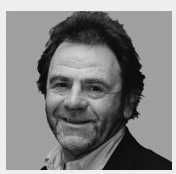
– Johnson D and Johnson R, 2002, 'Learning together and alone: overview and meta-analysis', *Asia Pacific Journal of Education, 22*, pages 95-105. Cited in R Gillies and R Cunnington, 2014, *Cooperative learning: the behavioural and neurological markers that help to explain its success:* paper presented to Research Conference 2015 conducted by the Australian Council for Educational Research, Melbourne Australia. Download the full paper at http://research.acer.edu.au/cgi/viewcontent.cgi?article=1222&context=research_conference

NEXT STEPS IN DEEPENING OUR PROFESSIONAL PRACTICE – *page 30*

Joyce BR, Calhoun EF and Hopkins D, 2009, *Models of Learning – Tools for Teaching* (Third edition), Maidenhead, Berks, UK: Open University Press/McGraw-Hill Education.

ABOUT THE AUTHORS

Professor David Hopkins



Among many educational roles David has served as Chief Adviser to the UK Secretary of State on School Standards, Dean of Education at the University of Nottingham, an Outward Bound Instructor and an International Mountain Guide. With Wayne Craig, David led the Powerful Learning school improvement initiative in the northern suburbs of Melbourne, Australia. David is Emeritus Professor at London's Institute of Education, and founded the Adventure Learning Schools Charity. In 2013 he completed his school improvement trilogy with the publication of *Exploding the Myths of School Reform* (ACER Press).

Wayne Craig

A renowned systems improvement expert and author of *Powerful Learning: A Strategy for Systemic Educational Improvement*, Wayne guides McREL's Melbourne-based team of consultants and researchers to deliver services and solutions across Australia and Asia. In addition, he is integrating elements of Powerful Learning with McREL resources to create a systems-wide approach to developing curious, engaged, and successful learners and educators. Previously, Wayne was a regional director at the Department of Education and Early Childhood Development in Victoria, where he led a large-scale effort across the Northern Metropolitan Region to raise achievement and produce better outcomes for students.

Oli Knight

Oli Knight is seeking practical ways of breaking the link between background and achievement. He has worked with David Hopkins as Director of Teaching and Learning for Bright Tribe, a Multi-Academy Trust with schools across England. Before joining Bright Tribe, Oli worked as a teacher, Advanced Skills Teacher and vice principal in London. He is currently Headteacher of Greenwich Free School which serves a disadvantaged population in South London. Oli's book, *Creating Outstanding Classrooms: a whole-school approach*, was published by Routledge in 2013.

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