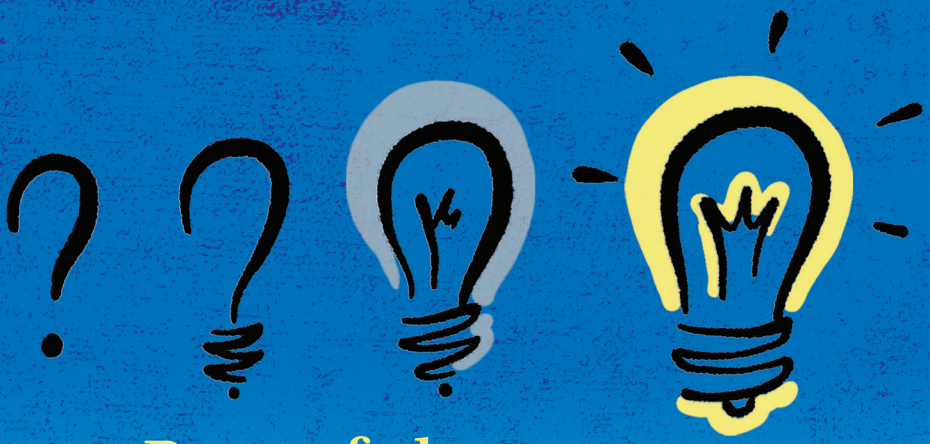
Foreword by John Hattie



Powerful. Questioning

Strategies for Improving Learning and Retention in the Classroom

Michael Chiles

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Foreword by John Hattie

My 3-year-old granddaughters are deep into the 'why' questions, as they try to understand their world, build a theory of mind and express their curiosity. By age 8 they will have switched to asking 'what' questions, and so often lose their innate sense of wonder, mimic their teachers and aim to be compliant so as to be a 'good pupil'. As teenagers they are more likely to ask 'why not', as their development of autonomy clashes with the school and often family desire for compliance, and as young adults they switch to 'how much'. If only it were this simple, if only we could retain all these forms of questions, and if only we considered questions as about more than seeking answers but inviting thinking. If only we saw errors to questions not as sources of embarrassment but as opportunities for learning.

We humans love to ask other questions, seek answers and contemplate next questions. We see questioning as a core to seeking wisdom, and cite Socrates' methods for eliciting ideas, promoting connections and showing that the answers were always there just waiting to emerge. There are so many books on how to ask great questions, we can become absorbed in TV shows like *Jeopardy!* and *Mastermind*, and we can also have 'the' question we want to ask politicians, famous people or gurus. That is the easy part.

The hard part is asking the right question at the right time for the right purpose and with the right level of complexity. As educators, we spend so much time on devising the right question when our aim may be more about eliciting the right response – maybe inviting pupils to contemplate, use learning strategies to come to the right answer, work with others to prioritise the optimal answer or to draw out wrong answers so as to better understand how they are thinking. What an unusual profession where the purpose of questioning is not simply to get the right answer!

There have been many studies showing that the dominant mode of class questions is the IRE cycle: *initiate* a question, get a *response* and the teacher *evaluates* the response. The reason for so much questioning relates to the mind frames about teaching and learning held by many teachers – that is, their role is to impart knowledge and information about a subject, and pupil learning is the acquisition of this information through the processes of repetition, memorisation and recall. Hence, the need for much questioning to check they have recalled this information. Teachers can dominate the class regarding questions, and questions are the second most common teaching method after teacher talk. The estimates of teacher questions vary between 100 and 350 a day, and the responses from these questions are typically some form of recall of facts, judgement or correction, primarily reinforcing, affirming, restating and consolidating pupil responses.

Teachers already know the answer to over 80% of the questions they ask, most of the questions are closed, with low cognitive demands on pupils, and the typical question requires less than a three-word answer. Not all questions are the same or have the same impact. Throughout *Powerful Questioning*, the many types of questions are explored, and the aim is to move past the IRE schedule.

There have been nine meta-analyses (no. studies = 270) of the effects of questioning on achievement with an overall effect size of 0.51, and seven meta-analyses (no. studies = 360) of pupil self-questioning with an overall effect size of 0.53. Imagine the effect size if we moved beyond the factual, the accurate, the IRE schedule. Here is where this book is so powerful.

Teachers can hear their impact from the answers to their questions, but more so when they hear the pupils' questions. How many questions about their thinking and ponderings do we hear in a day (about two!)? So often, pupils want to ask, 'Why is this so?' whereas we ask, 'What is so?' but perhaps it is no surprise that so many pupil questions in class mimic our use of the IRE schedule, expecting a less than three-word answer by the teacher

and thus missing a richness and the skills required for our pupils to engage in asking more impactful questions. As Michael Chiles quotes, 'The greatest attribute of questioning is that it stimulates thinking in the classroom,' and questioning is 'the single most influential teaching act' because questions empower pupils to think, which in turn can contribute towards enhancing learning – so we had better get it right. Surely, our aim is not to develop quiz-kids filled with facts, three-word or fewer answerers or to ask questions to which they already know the answer.

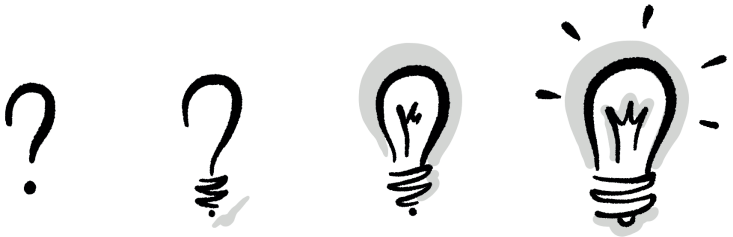
Questions can vary from lower to higher order, and getting the balance right at the right time to the right level of complexity is a major purpose of *Powerful Questioning*. Michael Chiles documents the various purposes of questions and pushes us to move beyond checking the facts and knowledge status of pupils (usually a select group) in the class, and to use questions to activate thinking, promote reflection and pose challenges. Questions can inform the teacher of their impact, lead to different directions in the lesson and invite joint teacher–pupil investigation of answers. He investigates the ways to build a questioning culture by increasing pupil questions and explains beautifully how to use questions so pupils can check for understanding, to move from lower to higher order questions (and back again), to assess progress towards success criteria and how pupils can effectively question each other to build pupil collective efficacy about their learning.

Video your teaching before and after reading this book, and note the switch from IRE dominance to sharing the questioning with the pupils, and noting how the pupils become more engaged in the learning when they take the role of questioners.

John Hattie

Contents

Foreword by John Hattie ..... *i*
Acknowledgements ..... *v*
Introduction: The power of a question 1
Chapter 1: Why do we ask questions? 17
Where does it all begin? 19
The purpose and benefit of asking powerful questions 29
The typology of questions 31
The cognitive demands of a question 36
The hallmarks of a good question 40
Chapter summary and reflections 46
Chapter 2: How do we foster a questioning culture? 49
Barriers to classroom participation 59
Building participation 65
The powerful questioning classroom 76
Chapter summary and reflections 81
Chapter 3: Questioning as a mechanism to check for understanding 83
Think, pair, share 96
Mini whiteboards 100
Clarifying mistakes vs errors 107
Probing questions to deepen understanding 113
Chapter summary and reflections 117
Chapter 4: Diagnostic and reflective questioning 119
Formative and summative assessments 122
Cumulative diagnostic assessment 124
Reflective questions 127
Chapter summary and reflections 136
Chapter 5: Powerful questioning principles 139
Concluding thoughts 159
Bibliography *161*



Introduction

The power of a question

> The greatest attribute of questioning is that it stimulates thinking in the classroom.
>
> **Michele Filippone**[1]

Questioning is a staple feature of a teacher's toolkit across all phases of education. Our classrooms are awash with explanation, modelling and feedback, but of all the pedagogy strategies at the teacher's disposal, questioning is one of the most dominant methods of instruction. It is the heartbeat of a classroom.

Take a moment to consider the last lesson you taught and how many questions you asked. Teachers are described by many as 'professional question-askers', and the use of questioning in the teaching and learning process dates back to one of the most influential users and developers of questions, the Greek philosopher Socrates. Socrates believed that by asking questions we encourage reflection, and their use is most effective when we create a continual loop of dialogue between the asker and the receiver, to allow movement from surface to deeper level thinking. Questions are the tool that enable teachers to transfer knowledge, leading to the conclusion that effective questioning is effective teaching.

Classroom teachers worldwide spend a large percentage of their time in the questioning–response mode; so much so that several

1 M. Filippone, Questioning at the Elementary Level. Unpublished MA dissertation, Kean University, NJ (1998), p. 7. Available at: https://eric.ed.gov/?id=ED417431.

research studies indicate that an estimated 40% of classroom time is spent in this mode.[2] Therefore, we can deduce that questioning must be a pivotal element in the teaching and learning process, and that asking good questions plays a critical part in supporting pupil achievement. The time spent questioning has remained fairly consistent since 1912, with Leven and Long identifying that 8% of the school day is spent asking questions – a statistic that remained static between 1912 and 1981.[3]

With all this time spent asking questions, we might assume that most teachers in most classrooms encourage pupils to think with the questions they ask. However, while questioning is a dominant component of many lessons across all phases, Orletsky indicated that all too often the questions teachers ask haven't been well prepared and don't serve the purpose of encouraging pupils to think.[4] Therefore, the art of asking questions is masked by the purpose of the questions asked, leaving a gap between question delivery and its subsequent impact on pupil achievement.

Pedagogy reflection: Taking our time to create purposeful questions will be more beneficial than merely asking lots of purposeless questions.

The art of asking questions underpins everything we do as teachers. It is the backbone of communication between teachers and pupils, pupils and pupils, and teachers and teachers. As Filippone noted in the epigraph at the beginning of the chapter, it 'stimulates thinking' to encourage reflection and initiate information recall, which in turn reveals the quality of what pupils are thinking and

2 J. H. Johnston, G. C. Markle and A. Hayley-Oliphant, What Research Says About Questioning in the Classroom, *Middle School Journal*, 18(4) (1987), 29–33.

3 T. Leven and R. Long, *Effective Instruction* (Washington, DC: Association for Supervision and Curriculum Development, 1981).

4 S. Orletsky, *Questioning and Understanding to Improve Learning and Thinking (QUILT): The Evaluation Results* (Charleston, WV: Appalachia Educational Laboratory, 1997). Available at: https://eric.ed.gov/?id=ED403230.

their degree of understanding. It is the key to unlocking what is hidden, the fuel to prompt further thought and the shining light to developing a deeper understanding. This is reinforced by Ausubel who said: 'The most important single factor influencing learning is what the learner already knows. Ascertain this and teach him/her accordingly.'[5]

Without questions, we are essentially left in the dark about what our pupils know and don't know. As Ausubel observed, we need to ascertain what learners already know in order to decide what needs to be taught. We do this by asking questions. Without knowing what our pupils have learned, we can't support them to move forward and develop their understanding further. In fact, its role as a teaching tool in the classroom has been the subject of studies for many years, which alongside my own personal experiences and that of other practising teachers will underpin a lot of the discussion that threads throughout the book. As with any research, it isn't a one-size-fits-all approach, meaning that the research outlined and the strategies suggested for you to use in your classroom, or as a leader to introduce to colleagues, might look different to fit your context. We certainly can't adopt a tick-box culture when using questions as a pedagogic tool in our classrooms. What we can do is examine the best bets from the research and consider how they might apply with the pupils we support in our own communities, as well as the colleagues with whom we work.

That is the reason why, alongside unravelling the reasons behind why we ask questions as well as the potential power of asking questions, I will also outline a set of core principles, recommendations and classroom-based scenarios that can be used to implement powerful questioning in your classroom and school. After fifteen years of teaching, I am a firm believer that creating a set of key principles for pedagogy, such as how schools approach giving feedback or using assessment to judge pupil performance, is beneficial

5 D. P. Ausubel, *Educational Psychology: A Cognitive View* (New York: Holt, Rinehart & Winston), cited in E. C. Wragg and G. Brown, *Questioning in the Secondary School* (Successful Teaching Series) (London: Routledge, 2001), p. 7.

because it reduces the potential for a tick-list approach to applying research in the classroom. When this happens, school leaders tend to use the same blanket approach across all phases and subjects.

Let's look at one example to illustrate this. One of the main findings I have taken from reading over sixty research papers on questioning is that the most effective teachers ask lots of questions in their classrooms. At face value, this is a true statement. However, quantity is a poor proxy for quality if what we want is for teachers to ask powerful questions that generate more than surface-level thinking. It would miss what we have started to unravel in this introduction, that the intention and delivery of the question is more important than the number of questions asked. Gall emphasised the importance of asking quality questions, commenting that it is the quality rather than the quantity of teacher questions that promotes pupil learning.[6] In my experience, the tick-list approach to implementing pedagogy in schools isn't effective and ultimately has a negative impact on learning.

With this in mind, as you engage with the content in the book, there will be opportunities to spend some time reflecting on your own practice and experience of asking questions with a series of activities that you can complete either by yourself or with colleagues in your department. This feels like an ideal moment to begin with our first activity.

6 M. D. Gall, The Use of Questions in Teaching, *Review of Educational Research*, 40(5) (1970), 707–721. https://doi.org/10.3102/00346543040005707

Activity

Research-based evidence is now a common feature within schools. Thinking about your own school context, what research-based pedagogy strategies have been introduced recently? Do you feel you have had time to implement the strategies within the context of your subject?

If yes, can you identify the mechanisms used to implement the strategy?

If no, what factors do you think might have affected its implementation?

When teachers use questions, it opens the door to establishing to what extent their explanations and models have been understood, it allows pupils to express their views and develop their understanding of a subject, and it provides teachers and pupils with opportunities to give feedback. So compelling is this view that curriculum reformer and teacher-educator Hilda Taba declared that when teachers use questions it is 'the single most influential teaching act'[7] because when they are used to prompt pupils to think deeply about knowledge, they have the potential to contribute towards enhancing learning.

A teacher could end up asking over a million questions over the course of their career.[8] These will vary from lower to higher order questions, promoting surface to deeper level thinking depending on the type and number of questions asked. Getting this balance right is challenging, and it seems that the research is inconclusive on which of these types of questions is more effective. However, I

7 H. Taba, *Teaching Strategies and Cognitive Functioning in Elementary School Children*. Cooperative Research Project No. 2404 (San Francisco, CA: San Francisco State College, 1966), cited in W. W. Wilen (ed.), *Questions, Questioning Techniques, and Effective Teaching* (Washington, DC: National Education Association, 1987), p. 14. Available at: https://files.eric.ed.gov/fulltext/ED310102.pdf.

8 Wragg and Brown, *Questioning in the Secondary School*, p. vii.

will outline how combining these different questions strategically using a linear approach is more likely to create the foundations for developing and deepening pupil understanding. It is a bit like constructing a tower: you need a strong base on which to build the columns and to create the stability necessary to add increasing numbers of floors and height to the building. When asking questions, we need to start with those that elicit initial recall and then move towards those that prompt deeper thinking, requiring pupils to do some deep excavation from stored memories in their schema to articulate their understanding in new or unfamiliar contexts.

Schemas enable us to form a mental representation of the world. The term was first introduced by Jean Piaget who believed that schema underpinned key stages in cognitive development. Piaget defined schema as 'a cohesive, repeatable action sequence possessing component actions that are tightly interconnected and governed by core meaning'.[9] From Piaget's definition, we can summarise that a schema is a way to organise knowledge in 'files' that relate to different aspects of the world. As a person develops, so the number and complexity of schemas increase. In essence, neither lower order nor higher order questions are necessarily better than the other, but a combination of both in the question–response mode have the power to assist in stimulating thinking and building a more advanced understanding of the world around us. We will explore this further in Chapter 3.

Pedagogy reflection: Combining the use of lower order and higher order questions will be more powerful than using them in isolation.

Right from the beginning, trainee teachers will be asking hundreds of different types of question as they develop their craft

9 J. Piaget, *The Origins of Intelligence in Children*, tr. M. T. Cook (New York: International Universities Press, 1952), p. 7.

in the classroom. Many of these questions will be fired at pupils with the aim of checking for understanding, activating thinking, recalling knowledge, promoting reflection, reinforcing expectation and posing a challenge.

In a research study of forty teachers, Brown and Edmondson found that the most common criteria teachers cited for asking questions was pupils' ability, with the main reasons including: for gaining attention and understanding (high ability), for checking and revision (medium ability) and for understanding and management (low ability).[10] The reasons and percentages are listed below, with encouraging thought, checking for understanding and gaining attention receiving the highest share.[11]

Reason	Percentage
Encouraging thought, understanding of ideas, phenomena, procedures and values.	33%
Checking understanding, knowledge and skills.	30%
Gaining attention to task, to enable the teacher to move towards teaching point in the hope of eliciting a specific and obscure point, as a warm-up activity for pupils.	28%
Review, revision, recall, reinforcement of recently learned point, reminder of earlier procedures.	23%
Management, settling down, to stop calling out by pupils, to direct attention to teacher or text, to warn them of precautions.	20%

10 G. A. Brown and R. Edmondson, Asking Questions. In E. C. Wragg (ed.), *Classroom Teaching Skills* (London: Routledge, 1989), pp. 97–120.

11 Wragg and Brown, *Questioning in the Secondary School*, p. 8.

Reason	Percentage
Specifically to teach whole class through pupil answers.	10%
To give everyone a chance to answer.	10%
Ask bright pupils to encourage others.	4%
To draw in shyer pupils.	4%
Probe children's knowledge after critical answers, redirect question to pupils who asked or to other pupils.	3%
To allow expressions of feelings, views and empathy.	3%

Activity

Working with a colleague, reread the responses from the teachers in the table above on the reasons why they asked pupils questions and rank them in order of how you use them in your classroom. Try to think of examples of questions you have asked with the intention of eliciting one of these reasons. For example, for 'review, revision and recall': 'Based on what we studied last lesson, what coastline do headlands and bays form on?'

All of these aims are key to promoting a learning culture within your classroom. Alongside these intentions, Morgan and Saxton suggest that questions have five core purposes:

1. The process of asking pupils questions means teachers can ensure they are involved in the lesson.
2. When pupils answer a question, it provides them with the opportunity to share their views on the topic of discussion.
3. When teachers ask pupils a question, it allows other pupils to hear different perspectives from their peers.
4. Asking different types of questions enables teachers to control the flow of their lesson, not only with respect to learning but also to ensure that pupil behaviour is maintained.
5. Questioning pupils at different points in the lesson provides teachers with valuable information which helps to determine what they have learned and therefore what to cover in subsequent lessons.[12]

In essence, asking questions brings many benefits, and the more strategic we are as classroom practitioners with our use of questions, the more likely we are to support our pupils to learn. This was echoed by Rosenshine in his ten principles of instruction, one of which was dedicated to asking questions: 'Questions allow a teacher to determine how well the material has been learned and whether there is a need for additional instruction. The most successful teachers ask a large number of questions.'[13] While Rosenshine indicated that the best teachers ask lots of questions, as we have seen, not all questions equate to supporting learning. We will explore this later on when we consider what it means to ask the right questions.

12 N. Morgan and J. Saxton, *Teaching, Questioning and Learning* (London: Routledge, 1991).

13 B. Rosenshine, Principles of Instruction: Research-Based Strategies That All Teachers Should Know, *American Educator* (spring 2012), 12–19 at 14. Available at: https://www.aft.org/sites/default/files/Rosenshine.pdf.

Rosenshine is not the only researcher who has championed the power of questions; others have also emphasised the importance of using questions in the classroom to promote learning. In 1978, Gall et al. conducted a two-week experiment with a group of elementary school classes based on the topic of ecology. The study involved one group of classes reading a textbook each day and then answering questions set by the teacher, while the other classes read the same textbook but didn't engage in answering questions from the teacher. At the end of the study, the group who participated in the question session from the teacher performed better than the control group.[14]

Pedagogy reflection: When teachers ask the right questions and involve pupils, there is a greater probability that it will boost pupil performance.

When I first started teaching, the thought of asking pupils questions was daunting – and when pupils asked me difficult questions I would find this equally challenging. This is because I was unsure how to respond if I didn't know the answer instantly, as I was still developing my own subject knowledge and getting my head around the curriculum. I hadn't yet developed a strong repertoire of knowledge examples and non-examples, and I was unaware of the common misconceptions that pupils might present in lessons. It was a dilemma: I didn't know all the answers but I felt that I should know them to build my credibility as a new teacher. I found it unsettling when a pupil asked a challenging question and I couldn't answer it – after all, I was their teacher.

In the first few years of my career, I would seek to move on quickly when I was asked these difficult questions and put the focus on the flow of questions going the other way – from teacher to

14 M. D. Gall, B. A. Ward, D. C. Berliner, L. S. Cahen, P. H. Winne, J. D. Elashoff and G. C. Stanton, Effects of Questioning Techniques and Recitation on Student Learning, *American Educational Research Journal*, 15 (1978), 175–199.

pupils – by asking another question. Inevitably, I was stifling the opportunity to use questions to stimulate thinking and promote learning. I was using it as a method to pull knowledge out and affirm what I believed the select few pupils I chose to answer a question should know. Not only was I doing all the thinking, but I was also asking lots of questions to avoid getting into a meaningful conversation about the learning for fear of revealing that I didn't know the answer. I was focused on asking low-level cognitive questions that emphasised factual recall based around knowledge with which I felt secure.

On reflection, this was one of the key issues I needed to develop. The questions I asked weren't challenging enough because they were questions I felt sufficiently confident that the pupils would be able to answer, and therefore avoid that awful silence. If I wanted to challenge pupils, I would need to get them to discover the answer from a pre-prepared worksheet or through a research task – that is, shifting the flow from teacher to pupil.

While getting pupils to ask more of their own questions is a skill we want them to develop, it isn't something we should be doing during the initial phase of instruction, when they are novices in the field in which we want them to become experts, especially if it is new information that hasn't been taught previously. Considering prior knowledge is an important component when asking powerful questions in the classroom if we are to support knowledge retention and learning over time. We will explore this more deeply as we move through the chapters.

When it comes to answering questions, as teachers we may not know the answer to every question, despite taking the time in advance to prepare our explanations and anticipating the potential questions and misconceptions our pupils may have. This is okay and not something we should feel bad about. If while reading *Powerful Questioning* you feel that you haven't got questioning right, that is to be expected. The art of questioning isn't something we master overnight; it takes time and lots of practice to get it right. Every teacher, no matter how many years of experience they may have,

An evidence-based examination of the power of questioning in the classroom and how it can be improved.

Take a moment to consider the last lesson you taught and how many questions you asked. To what extent do we consider the types of questions we're using? Are the questions we ask students actually helping to support learning?

Powerful Questioning delves into the theories behind the use of questioning and asks how best to use this pedagogical tool as a powerful springboard to support learning in the classroom. Providing a wide range of practical strategies, Michael Chiles pushes us to move beyond simply checking the state of pupils' knowledge and instead use questions that activate thinking, promote reflection and pose challenges in the classroom. This book examines the reasons behind the questions we ask and reveals the power of asking the right questions, in the right way, at the right time.

Essential reading for all teachers and school leaders.

Michael Chiles has written a terrific book to explain why and to show us how.
Mary Myatt, education writer, speaker and curator, Myatt & Co

A valuable contribution to every teacher's professional learning.
Dr Steven Berryman, President, Chartered College of Teaching

Powerful Questioning is going to prove a potent tool to every teacher who reads it.
Alex Quigley, author of *Closing the Writing Gap*

Michael Chiles gives us the knowledge and techniques that will make our use of questioning most effective.
Patrice M. Bain, co-author of *Powerful Teaching* and *Organizing Instruction and Study to Improve Student Learning*, author of *A Parent's Guide to Powerful Teaching*

In this superbly researched and referenced book, Michael Chiles explores the purpose and untapped potential of questioning within classroom pedagogy.
Andy Buck, Founder of Leadership Matters and BASIC Coaching

A superb addition to any classroom teacher's pedagogical bookcase.
Jon Tait, education leader, author and speaker

An experienced school leader and principal examiner, **Michael Chiles** has been teaching for over fifteen years. He has delivered training both nationally and internationally, supporting teachers in their approaches to implementing effective assessment and feedback practices. Currently an assistant principal, he writes blogs at GeogHod, sits on the Chartered College of Teaching Council and enjoys walking in the British countryside with his Border collie. He is also the author of *The CRAFT Of Assessment* and *The Feedback Pendulum*.

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