

The
Expert
Teacher

Using Pedagogical Content Knowledge
to Plan Superb Lessons

Darren Mead

edited by Phil Beadle

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For Tomas and Mandy

Contents

Foreword	ix
Acknowledgements	xi
Introduction	1
Questioning	3
Effective teacher behaviours	4
How to use this book	6
Part I: Pedagogical Content Knowledge: How is Your Subject Learned?	
Chapter 1. Using Pedagogical Content Knowledge to Plan to Overcome	
Misconceptions	15
The ampersand	16
Planning to tackle misconceptions	17
Making students aware of misconceptions	22
Creating a deliberate moment of ambiguity	25
Keeping it 'real'	26
Focusing assessment on the misconceptions	29
Teaching critical thinking	32
Summary	41
Chapter 2. Using Pedagogical Content Knowledge to Create Contexts and	
Connections in Learning	43
Creating contexts	43

The Expert Teacher

Harry Brightwell moments	45
How to create a context for learning	46
Structures to share the context of the learning	48
Students learn what they do	54
What is adolescence?	57
Planning to make connections	67
Constructive alignment	68
The concept map: a task that exemplifies making connections	70
Building connections – preparing to write	73
Summary	75
Chapter 3. Using Pedagogical Content Knowledge to Plan to Teach Difficult and Important Knowledge	77
Planning to go through threshold concepts	77
What can teachers do to plan for difficult and important knowledge?	86
Summary	108

Part II: Pedagogical Content Knowledge: Expert Teaching and Learning

Chapter 4. The Art of Teacher Communication: Planning What to Say and	
How to Say It	127
What is teacher talk for?	127
Guiding students to generate the knowledge themselves	129
Inputs and outputs	135
How do teachers represent knowledge?	136
Constructing analogies	142
Choosing examples	148
How do great teachers explain things well?	152

Contents

1. Expert teachers have more pedagogical content knowledge	154
2. Expert teachers are better at balancing student and content centredness	155
3. Expert teachers provide more structured explanations	173
4. Expert teachers are better communicators	190
5. Expert teachers are better at improvising	202
How can reflective practice help us to develop teaching expertise?	216
Summary	217
Chapter 5. The Act of Learning: Memory as a Process	219
Working memory	220
Summary	242
Chapter 6. The Act of Learning: Memory as a Destination	245
What is long-term memory?	245
How is long-term memory different and how do we get there?	247
Organising knowledge and concepts	249
Making learning purposeful – tending to the content	255
Using contrast to raise curiosity and interest, and other ways to gain attention	258
Engaging the emotions	264
Repetition as a strategy	266
Narratives in subjects: revisiting concepts over longer periods of time	279
Summary	287
Conclusion	291
References and Further Reading	295
Index	313

Foreword

It's early 2012, and I am trawling the internet for ideas about metacognition. I am in the middle of writing a book (for money – but not for much of it) that is going to be called *The Mighty Book of Plenary* and which eventually ends up being called *The Book of Plenary: Here Endeth the Lesson*. I already know quite a bit about the theoretical basis of metacognition and have read enough boring, excessively dense academic papers on it to know that anyone who says to you that it's 'thinking about thinking' isn't thinking – that would be meta-thought, you sillies.

What I want are ideas from someone who has been trying stuff out in the classroom, who has read the theoretical stuff and tried to make it concrete, realistic, doable. I keep coming back to the same blog. It is called *Pedagogical Purposes* and the bloke writing it seems a bit different. Genuinely, the point of the blog is not to promote his brand, his career, his ideas. Genuinely, he is using it to share his professional learning. He is also – genuinely – a little odd. His name is Darren Mead and he claims to be a former circus strongman. From his picture, you can't be sure if he is lying.

I get a bit stuck with this blog because the level of learning in it is quite a way above mine. He has clearly read a lot of books and academic papers. But not only this, he has digested them and shares whether and how he feels they work in the classroom. He doesn't seem to have any overriding ideology, he belongs to no club; he just wants to help.

It's 2013. I approach Darren, who, it turns out, is a science teacher in the far, cold part of the North where people speak a different language, to see if he wants to write a book. 'Why aye' he replies.

It's 2014 and I am speaking at a conference for the Essex Secondary Head Teachers' Association. I am on after Alistair Smith and am nervous as, in terms of speaking, Alistair is a legend to my mildly experienced ingénue. He starts off his speech by talking about the best teacher he has ever seen: someone he has seen recently who has blown him away! He says something along the lines of, 'He is the Jimi Hendrix

The Expert Teacher

of teaching. He can play it left-handed. He can play it right-handed. He can play it behind his back.' The teacher he is talking about is Darren Mead.

I don't tell Alistair that, by this time, Darren and I have been working for a year on this book. You will note that that was, at the very least, by the time you read this, five years ago. This book has taken six years from the initial approach to publication.

There are many reasons for this. Not the least is that Darren is a man of great enthusiasms, and his original text was the size of three books (there are another two books waiting to go if this one does as well as it should – his ideas on assessment (in particular) are profound). He is also very clever indeed and knows more than could possibly be fit into one book. The process of delivering this tome you are now holding has been a long one: Darren and I have skills in almost oppositional areas. He is about depth of detail where I like things artfully expressed. Hopefully, what you are holding is a worthy eventual compromise.

What it most certainly isn't, however, is a text for beginners. Darren is the one British teacher whose book, should it have existed, I would have rushed to the shops to buy as he knows more (I think) than anyone else in the profession about the theoretical basis of teaching. But, most importantly, that research hasn't just confined itself to the library. Everything Darren has to share has been trialled time and time again in the classroom. As a result, what you have in your hands is a book that I hope will be perceived to be exactly what it is – a serious piece of work by a serious person – and what it could be – a highly influential text. You'll not, I wager, find it easy reading, and you'll not, I imagine, have it by the bog for a light read (though there are funnies). But if you dive in, you'll learn lots of things you didn't know. If you dive in, you'll know some (a fraction) of what the man who might reasonably claim (though he wouldn't as he's actually quite shy) to be one of the most universally respected teachers that the world of education knows. If you dive in, you'll be on the way to the kind of expertise that Darren has. And that, dear teacher, is no small thing.

Phil Beadle

Acknowledgements

I have been fortunate to have worked with some inspirational people over my years in the classroom, too many to mention here. However, I will be forever thankful for the start I got as a student teacher from my professional mentors: John Burford, Mark Lovatt, Sarah Napthen and Rob Scott – experts in every sense of the word. I must also give an honourable mention to the original fire-starter, Alistair Smith. I was lucky enough to work alongside some amazing teachers at Cramlington Learning Village for 20 years, and I am grateful for the conversations, support and collaboration from which I learned so much. Thank you to Wendy Heslop and her staff.

Sadly, two of the great educators I have been blessed to work with are no longer with us. Dee Palmer Jones and Derek Wise CBE continue to be reference points in everything I do in my classroom. 'What would Dee do?' and 'What would Derek say?' are constant prompts in my and many others' thinking, and is a testament to their expertise and downright wisdom.

I am also thankful for the unique collaboration and support from the board members of the Two Jumps Learning Trust: Simon Brown, Chris Harte, Fergus Hegarty, Ian Neslon, Graeme Porter and Martin Said. I am grateful too to my colleagues from the old Teacher Effectiveness Enhancement Programme training days – Ken Brechin, Julie Mosley, Cath Rothwell and Trish Wright – and to our colleagues and friends from the Project for Enhancing Effective Learning, Ian Mitchell and the inspirational Jill Flack.

Thank you also to Phil Beadle for taking a random interest in what I do and for extending the offer of writing a book about it. Derek Wise once said to me, 'Darren, I know we can't teach you anything, but please let us support you in working out what you think is important,' which startled me somewhat as I thought I had concealed my stubborn single-mindedness rather well. Phil has done exactly this.

Finally, and most importantly, I want to thank my family for their love, support, encouragement and food. I love you Mandy, Tomas, Linda, Keith, Andrea, Mark and Rafa.

Introduction

An ode to lesson planning

Drive-through restaurants, click of a mouse shopping, no nails adhesive, get rich quick, open top bus tour, the 60 second news.

Silver service, personal shopper, bespoke carpentry, investments, exploring, a newspaper.

The second list appears marginally indulgent, but had we the time and money we would choose it over the former in an instant. Furthermore, most of us would actively avoid the first list (with the exception of no nails adhesive – a wondrous material), and herein lies the message: lesson planning is not a quick event; it is something to be indulged in, considered and practised, *adagio*. Amid the frantic pace and creeping pressure of being a teacher, this is our moment to slow down, reflect, research, collaborate and think. This is our choice.

Here is my belief: lesson planning should not be simplified – it should be made complex and rich. Complex planning necessitates that we, the professionals, understand how learning happens, how our students 'work', how our subjects (specifically) are learned and how they can be taught better. Then, and only then, will we be able to plan lessons that are complete.

It is in our planning that we become professional; for me, it is impossible to extricate professional learning from the planning we do. Our professional kudos is wrapped up in our ability to work out how to teach groups of individuals intricate and, at times, abstract ideas so that they understand, remember, apply and enjoy them. Our professionalism is all this and more. We manage emotions, conflicts, motivation, community and identity. This is the beautiful complexity we were first drawn to. To do all of this – and we cannot unravel it – is hard *yakka*: it takes time, knowledge and time. Yes, time: lots of it; it takes a whole career's worth of time to get this art half right.

The Expert Teacher

Ask yourself this, 'When do I really get to reflect about how I do my job?' If I am honest, it is when I am planning lessons. Although I don't really want to plan lessons – those arbitrary divisions of time; what I want to plan is how each bit of content is learned. It is actually impossible to plan an individual lesson as they don't exist in the learning world. When planning, I ponder: what went well? Whom did it go well for? What bombed? Did I have the right information to make good decisions today? Was all the information available to the students so they could make sense of it? How many times did they get each bit of vital information? All the questions I cannot possibly answer during a lesson, while I'm staving off the dominant question that we ask all lesson, every lesson: 'Is it OK to move on?' Classrooms are busy and complex, so succumbing to the overriding temptation of getting through the plan no matter what else happens is an understandable preoccupation. But is it the right one? Good planning and an understanding of how learning takes place help to prevent the thought of starting the next activity from becoming too dominant.

Never worry that you spend too long on a lesson plan, even in the sometimes overwhelmingly busy working day of a classroom teacher. It is an investment in you and your students – and as the famous shampoo vendor L'Oréal says, 'You're worth it.' In the long run, your planning and resources will be recycled and time will be saved, and you will be better at teaching that particular concept. Time constraints do have benefits; after all, necessity is the mother of invention. A lack of time encourages us to plan collaboratively and learn from someone else's experience (or allow them to learn from ours), and it is our students who benefit. Spending an age on a plan can lead teachers towards the fatal predilection of overly zealous and blind adherence to that plan. However, it is worth knowing that this is more likely if the plan is merely a series of activities. If the plan is built around what needs to be done to learn a concept, and furthermore, what the emerging understanding(s) might look like, then we can do the apparently contradictory thing of sticking to the plan and being entirely flexible and responsive at the same time.

All of the planning decisions we make are based on our pedagogical content knowledge. Pedagogical content knowledge is what we know about how learning happens, what we know about how our subjects are learned and what we know about the learners in front of us. This is practical knowledge. It is how we transform our subject knowledge into multiple ways of representing it in teachable ways. It is how we take the implicit expert thinking of a subject specialist and make it explicit through

Introduction

modelling. It is how we find out our students' prior conceptions and tailor their experiences in order for them to learn – and potentially reorganise their understanding when their preconceptions turn out to be misconceptions. Knowing how to do this is pedagogical content knowledge. Clearly, the role of pedagogical content knowledge in planning is central. To access it we have to stop, think and reflect on what students tend to already know, what they generally find difficult, what has helped in the past, what are the parts that make up the whole knowledge and what sequence the concepts should be taught in. This may require some research and discussions with other subject specialists. It takes time.

Questioning

From our pedagogical content knowledge we also get the knowledge to ask useful questions. There is a certain truth in the idea that many of our best questions are thought up on the spot as part of a dialogue. However, in order to more regularly ask purposeful questions, the planning is best done before the lesson. This allows us to consider:

- Why we are asking the question: is it to gather information on student learning? Is it to encourage students to think about an idea? Is it to consolidate learning? Is it to engage students with a new idea? Is it to reveal prior knowledge?
- Who is/are the question(s) for: the whole class or just a selected group of students?
- What response are we expecting to hear if they understand the concepts, if they know the concept, or if they are retaining a misconception or making a common mistake?

In the worst-case scenario, a teacher asks rhetorical questions to individuals as an attention keeping device, playing the baked potato skinned host of a bizarre quiz show, 'Guess What's In My Head?' The prize being that the teacher will continue with their explanation once a single correct answer has been given. In short, the questioning lacks pedagogical purpose. These questions are probably recall

The Expert Teacher

questions, perhaps on what has just been said or even about concepts the students should (already) know. If the only mechanisms a teacher has to ensure that key ideas are being recalled to aid long-term retention are some off-the-cuff questions flung at little Darren, who is staring out of the window, then all we can do is rue 30 lost opportunities.

If the aiding of retention is the purpose of the questioning, then the identification of the facts to be recalled should really be identified before the discussion, not when our attention is focused on who is paying attention. This allows us to couple the right question with the right mechanism. So, a question that recalls a key fact that will be useful in learning the new knowledge (e.g. that chlorophyll makes plants green), and the appropriate mechanism to ensure that all students have the opportunity to recall the information (e.g. think-pair-share, a random name generated with a 30 second think time or a choice of A, B, C answers) can then be matched to the content according to the teacher's professional knowledge as to which will serve this purpose best.

Effective teacher behaviours

Try an internet search of 'Who am I in ...?' and marvel at the myriad of unheard of TV shows where you can take a quiz to work out which character you would be in this show. (Apparently, I'm 53% Mickey Mouse, with which I'm fine.) As teachers, we are all character actors and on any one day will have to be most things to most people. Unfortunately, we tend to perceive how a fellow teacher acts as being a manifestation of their innate personality and ascribe their success to this. I have lost count of the number of conversations I've had about behaviour management after I have sent a willing newly qualified teacher to go and watch how a more experienced member of staff manages behaviour, only to be told that 'there weren't any problems', suggesting that the many nuances of the teacher's strategies were entirely missed.

Thankfully, there is a huge body of research on effective teacher behaviours, most notably from McBer (2000) and Muijs and Reynolds (2011), which suggests that an effective maths teacher might act in differing ways to an effective English teacher, with there being an area of overlap between all effective teachers. The key message

Introduction

here is that the behaviours of the most effective teachers are not based on their personalities but can be learned. The effective teacher behaviour research exemplifies the difficulties that teachers can have in applying research to practice, because this goes beyond knowledge and into the realm of our beliefs. This makes teaching a unique field of expertise. When student medics enter an operating theatre the environment and procedures are alien to them; they are an outsider learning to become an insider. As a student teacher, the classrooms, corridors, halls and desks are very familiar to us – we are already insiders and we bring with us an array of beliefs. This is not, of course, an argument for teachers having to enter voluntary psychoanalysis in order to uproot and reconstruct our belief systems in order to plan a lesson; however, sometimes we fail to see how we can do things better because of our certainties and our beliefs about learning and schooling. Our beliefs can act as filters to new information and experiences.

There are undeniable commonalities in the behaviours of the most effective teachers. A very brief summary of effective teacher behaviours might look like this. Effective teachers are confident in their ability and are highly committed to the success of all students. Their interactions are consistently fair and respectful, inducing a sense of trust in their classroom. They have the ability to think analytically and conceptually, allowing them to be flexible in their approaches. They act proactively and are constantly seeking out information to make good decisions. They set high standards, model them and hold others accountable. They have an overwhelming passion for learning and for what education can do. They work in teams, understand the motivations of others and seek to influence them in positive ways. They communicate clearly and are inclusive. They employ a variety of teaching methodologies that engage and stimulate thinking. They take an active interest in their own pedagogical content knowledge and use this knowledge to teach as well as they can. They create classroom communities that provide an orderly and civilised climate where students feel safe and suitably challenged. They teach, they learn and they seek to model the behaviours that exemplify these noble pursuits (McBer 2000: 2).

As expert teachers we need to have deep and rich knowledge of many pedagogies as well as of the subjects and students we teach. This is our DNA. Planning lessons is how we learn this, so I am going to take my time over this, not as an indulgence but as a right.

How to use this book

Within this book I hope you find a detailed (but not absolute) set of notes on what we know about pedagogical content knowledge, teaching and learning. Where there seems to be an answer, it has been offered; where it is vague, what we think we know has been offered. This has been done in the spirit that it is better to know what you do not know than to not know that you do not know. The intention of this book is to help teachers to reflect on what and how they plan, how they teach and how to improvise around these plans.

When I was asked by Phil Beadle to write this book, my first reaction was to ask who had turned him down first. Phil was too polite to answer but my reaction has borne me out. I knew, somehow, that writing a book that was originally called 'How to Plan Lessons' was a nigh on impossible mission. What seems like a simple process involves much knowledge about the stuff to be learned; how it is learned; the context of the school, class and students; and the relationships, thinking and motivation behind being a learner. Not to mention how assessment, examinations and schools work, and how the system does not. My initial feeling is my final feeling – that there is much to say on the subject. So, on 6 August 2014 at 8:29am, I sat down and randomly wrote questions that I thought might constitute a checklist.¹ It quickly became overwhelming and out of sequence, as many ideas ran concurrent with others. I present the list here to illustrate what goes on in teachers' heads. I am sure the list is incomplete.

- What exactly needs to be learned?
- How exactly can this be and remain useful?
- How will this connect to the bigger question or problem?
- Where is this knowledge headed towards – what are the next things to be learned in subsequent sessions?
- Do all the intentions have equal value? Are some concepts more important than others?

¹ Isn't Google Docs an amazing and unnerving thing!

Introduction

- What might the students already know that will be useful during learning this?
- How can this be made useful and relevant to them?
- What misconceptions might they have?
- How might these be challenged and corrected?
- What might they find difficult?
- How might this be made easier?
- Has this been oversimplified? How might they develop a more complex understanding? How do we work towards complexity?
- How best is this taught?
- How best is this learned?
- What activities will help them to learn this?
- How do I need to be to manage this learning?
- How will the students be motivated?
- What questions will be asked to develop their understanding?
- What questions will be asked to check their understanding?
- How might the uniqueness of learning be expressed by different students?
- How will the teacher collect enough information to make good decisions?
- How will the teacher collect detailed information about student learning?
- What feedback could be given to develop their understanding?

The Expert Teacher

- What alternative explanations could be used to develop their understanding?
- How many exposures to each learning intention are the students getting?
- Are there any subsequent exposures to this knowledge?
- How will the students know they have learned this?
- Do they have an opportunity to make sense of this information?
- Do they have an opportunity to improve the quality of their work and/or understanding?
- Do they have an opportunity to practise and rehearse?
- Do they have an opportunity to reflect and respond to feedback?
- Which tasks are best served as group tasks? Which tasks are best served as individual tasks?
- Who is being served by each task? Is it for the students to learn or to provide me with information about their learning? Can it do both?
- How will motivation be maintained?
- How long do I expect each activity to take?
- Will the students cover all of the intentions satisfactorily in the time we have?
- Are there too many intentions for this time period?
- Which activities are OK to move on from in a slightly incomplete form? Which ones must have 100% completion?
- What do successfully completed tasks look like? What will their qualities be?

Introduction

- Will increasing student ownership of the tasks/learning improve motivation and retention? How can the tasks be designed to do this?
- Do any of the tasks help to develop broader literacy and numeracy?
- What does this knowledge look like when fully formed?
- What are the intermediary steps to get there?
- Do any of the tasks help to develop literacy within my subject area?
- How do these opportunities support the original subject learning intentions?
- How can a balance be found over subject content and developing literacy?
- How can feedback be provided to develop literacy and numeracy?
- Do we all have an opportunity to be human?
- What attributes and skills would support students learning these concepts?
- How can this be scaffolded to help students develop these? How can students be supported with these?
- What feedback might develop this over time? What experiences might they need to become better at these?
- Is our classroom community strong enough for mistakes to be made publicly?
- Is our classroom community strong enough for students to support one another?
- How will the class be managed?
- Who will sit with whom?

The Expert Teacher

- How will the students be greeted and settled?
- What rituals and protocols might be useful to build and maintain our classroom community?
- How will I set the tone for today's lesson?
- What is the appropriate tone for this learning to take place in?
- How will the learning be made memorable?
- How will the students memorise the learning?
- How will all students be challenged? How will all students be supported?
- How will all students access the information?
- What questions will they ask to gain the right information?
- What signs might there be to tell me that it is time to move the whole class on?
- What signs might there be to tell me that some students need a different route?
- What questions will encourage discussions about the content knowledge?
- What questions will encourage discussions about the strategies being used?
- When a student answers a question, how will I know they know this and have not just deduced it?
- How will learning look different to performance?
- How will students learn from other students? How will I ensure that this is right?
- What questions will stimulate metacognitive thinking around this content?

'But what does this look like in the classroom?'

This question generally occurs to educators when they enquire into evidence-based approaches to teaching – and often they will get to the end of a teaching manual only to find that it remains unanswered.

In *The Expert Teacher*, however, Darren Mead provides many of the answers.

One of the most universally respected teachers in Britain, Darren has devoted his professional life to attaining pedagogical excellence. In this book he examines in depth what expert teachers do to help students progress their learning and strive for academic success.

He lays bare the concept of pedagogical content knowledge and eloquently explains how to utilise it to overcome student misconceptions, create contexts and connections in learning and teach difficult and important content – empowering educators to transform their subject knowledge into multiple means of representing it in teachable ways.

Suitable for educators who are eager to experience the excitement of knowing and teaching their subject masterfully.

Darren Mead brings his lifelong professional obsession with pedagogical perfection to life in an accessible and intelligent book which, much like the man himself, is unassuming and not beholden to fashionable ideas.

Alistair Smith, trainer, author and designated learning consultant to the Football Association

It's hard to imagine any teacher reading this book without becoming profoundly more intentional in building and leading effective lessons.

Ron Berger, Chief Academic Officer, EL Education

Darren manages to take everything you took for granted about planning lessons and help you realise that not only is it the most important part of the job, but it can always be done better.

Chris Harte, Director, Unstuck Learning Design

Perfect for those who wish to continue to hone their craft and move themselves and others to the highest levels of professionalism.

Fergus Hegarty, Director of Science, Laidlaw Schools Trust, and Chair, Association of Science Education – North East region



Darren Mead is an experienced science teacher who has been described as 'the Jimi Hendrix of teaching' and 'perhaps the most intellectually engaged of all British teachers'. Based in the north-east of England, he shares his classroom-based interpretations of research through his highly respected blog, *Sharing Pedagogical Purposes*.

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