

# What if everything you knew about education was wrong?



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@LearningSpy

Forewords by  
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# Contents

<i>Foreword by Robert A. Bjork</i> .....	iii
<i>Foreword by Dylan Wiliam</i> .....	vii
<i>Acknowledgements</i> .....	xi
Figures and tables .....	xvii
Introduction .....	1
<b>Part 1. Why we're wrong</b> .....	<b>7</b>
1. Don't trust your gut .....	11
2. Traps and biases .....	33
3. Challenging assumptions .....	73
4. Why we disagree and how we might agree .....	91
5. You can prove anything with evidence! .....	107
<b>Part 2. Through the threshold</b> .....	<b>139</b>
6. The myth of progress .....	145
7. Liminality and threshold concepts .....	159
8. Learning: from lab to classroom .....	169
9. The input/output myth .....	177
10. The difference between experts and novices .....	197

**Part 3. What could we do differently? . . . . . 211**

11. Deliberately difficult . . . . .	215
12. The spacing effect . . . . .	221
13. Interleaving . . . . .	227
14. The testing effect . . . . .	233
15. The generation effect . . . . .	243
16. Variety . . . . .	247
17. Reducing feedback . . . . .	249
18. Easy vs. hard . . . . .	269

**Part 4. What else might we be getting wrong? . . . . . 273**

19. Why formative assessment might be wrong . . . . .	277
20. Why lesson observation doesn't work . . . . .	291
21. Grit and growth . . . . .	309
22. The dark art of differentiation . . . . .	319
23. The problem with praise . . . . .	329
24. Motivation: when the going gets tough, the tough get going .	337
25. Are schools killing creativity? . . . . .	353

Conclusion: The cult of outstanding . . . . .	357
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<i>Appendix 1. Data by numbers by Jack Marwood . . . . .</i>	<i>371</i>
--	------------

<i>Appendix 2. Five myths about intelligence by Andrew Sabisky . . . . .</i>	<i>391</i>
--	------------

<i>Bibliography . . . . .</i>	<i>413</i>
-------------------------------	------------

<i>Index . . . . .</i>	<i>433</i>
------------------------	------------



## Figures and tables

Figure 1.1.	The blind spot test .....	15
Figure 1.2.	Checker shadow illusion .....	16
Figure 1.3.	Checker shadow illusion version 2 .....	17
Figure 1.4.	Jastrow's duck/rabbit illusion .....	19
Figure 1.5.	Piracy and global warming .....	26
Figure 2.1.	Class size – inverted U .....	41
Figure 5.1.	The learning pyramid .....	111
Figure 5.2.	Dale's cone of experience .....	112
Figure 5.3.	The brain .....	123
Figure 6.1.	What progress looks like .....	148
Figure 9.1.	The Italian Game .....	186
Figure 9.2.	Ebbinghaus' forgetting curve .....	190
Figure 10.1.	The teaching sequence for independence .....	202
Figure 12.1.	The spacing effect .....	222
Figure 17.1.	Feedback for clarification .....	258
Figure 17.2.	Feedback to increase effort .....	262
Figure 17.3.	Feedback to increase aspiration .....	266
Figure 22.1.	Possible effects of differentiation on PISA scores ...	322
Figure A2.1.	Carroll's three stratum model of human intelligence	393
Table 12.1.	Optimal intervals for retaining information .....	224
Table 13.1.	Example of a spaced and interleaved revision timetable .....	231

What if everything you knew about education was wrong?

Table 17.1.	Possible responses to feedback . . . . .	252
Table 24.1.	The effort matrix . . . . .	339
Table 24.2.	Disruption/effort . . . . .	349
Table A2.1.	Heritability factors . . . . .	399



## Part 1

# Why we're wrong

Before we get started, have a go at answering the following questions:

1. Have you ever been wrong?
2. Might you ever be wrong?
3. List five things you've been told about education which you think might possibly be wrong:

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4. Have you ever acted on any of this information or anything else about which you weren't positive?
5. If so, why?

Now, check your answers below.

.....

If you've answered yes to questions 1 and 2, well done. You can skip Part 1 if you like and pass straight through the threshold. If you answered no, I'm going to attempt to persuade you that you might be wrong. Read on.

## Why we're wrong

If you managed to list one or more items in response to question 3, well done. There are undoubtedly more. If you weren't able to think of anything, stick around.

If you answered yes to question 4, I congratulate you on your ability to face the uncomfortable truth. If you answered no, you're either a very superior being or just plain wrong.

And if you answered 'I don't know' to question 5, welcome to my world. This is exactly where I found myself before I began the process of thinking about the content of this book. I hope my journey is of some use to you.



## Chapter 1

# Don't trust your gut

Man prefers to believe what he prefers to be true.

Francis Bacon

Nobody wants to be wrong – it feels terrible. In order to protect ourselves from acknowledging our mistakes, we have developed a sophisticated array of techniques that prevent us from having to accept such an awful reality. In this way we maintain our feeling of being right. This isn't me being smug by the way. Obviously, I'm as susceptible to self-deception as anyone else; as they say, denial ain't just a river in Egypt.

There are two very good reasons for most of the mistakes we make. Firstly, we don't make decisions based on what we *know*. Our decisions are based on what feels right. We're influenced by the times and places in which we live, the information most readily available and which we've heard most recently, peer pressure and social norms, and the carrots and sticks of those in authority. We base our decisions both on our selfish perceptions of current needs and wants and on more benevolent desires to positively affect change. And all of this is distilled by the judgements we make of the current situation. But our values and our sense of what's right and wrong can lead us into making some very dubious decisions.

Secondly, we're deplorable at admitting we don't know. Because of the way we're judged, it's far less risky to be wrong than it is to admit ignorance. If we're confident enough, people assume we must know what we're talking about. Most of us would prefer a clear answer, even if it turns out to be wrong, than an admission that someone is unsure. Because no one likes a ditherer, certainty has become a proxy for competence. Added to this, very often we don't know that we don't know.

## Why we're wrong

Feeling uncertain is uncomfortable, so when we're asked a hard question we very often substitute that question for an easier one. If we're asked, "Will this year's exam classes achieve their target grades?", how could we know? It's impossible to answer this question honestly. But no one wants to hear, "I don't know," so we switch it for an easier question like, "How do I feel about these students?" This is much easier to answer – we make our prediction without ever realising we're not actually answering the question we were asked.

Despite it being relatively easy to spot other people making mistakes, it's devilishly difficult to set them straight. Early in my career as an English teacher, I noticed that children would arrive in secondary school with a clear and set belief that a comma is placed where you take a breath. This is obviously untrue: what if you suffered with asthma? So how has this become an accepted fact? Well, mainly because many teachers believe it to be true. This piece of homespun wisdom has been passed down from teacher to student as sure and certain knowledge, probably for centuries. If you do enough digging, it turns out punctuation marks were originally notation for actors on how to read scripts. It's still fairly useful advice that you might *take* a breath where you *see* a comma, but it's a staggeringly unhelpful rule on how to use them.\*

I've spent many years howling this tiny nugget of truth at the moon, but it remains utterly predictable that every year children arrive at secondary school with no idea how to use commas. Teaching correct comma use depends on a good deal of basic grammatical knowledge. It's a lot easier to teach a proxy which is sort of true. Although the 'take a breath' rule allows students to mimic how writing should work, it prevents a proper understanding of the process. And so the misunderstanding remains. As is often observed, a lie can travel halfway around the world before the truth has had time to find its boots, let alone tug them on.

This kind of 'wrongness' is easy to see. It's much more difficult when what we believe validates who we are. Many of our beliefs define us; a

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\* In case you're interested, the only times you use commas are to separate items or adjectives in a list, before (never after) a coordinating conjunction, after a subordinate clause (if it begins a sentence), to separate direct speech from other elements of a sentence or to separate elements in a sentence that express contrast. All other uses, such as parenthetical commas and the serial comma, are mere variants of these instances.

challenge to our beliefs is a challenge to our sense of self. No surprise then that we resist such challenges. Here are some things which defined me and which I used to believe were certain:

- Good lessons involve children learning in groups with minimal intervention from the teacher.
- Teachers should minimise the time they spend talking in class and particularly avoid whole class teaching.
- Children should be active; passivity is a sure sign they're not learning.
- Children should make rapid and sustained progress every lesson.
- Lessons should be fun, relevant to children's experiences and differentiated so that no one is forced to struggle with a difficult concept.
- Children are naturally good and any misbehaviour on their part must be my fault.
- Teaching children facts is a fascistic attempt to impose middle class values and beliefs.

These are all things I was either explicitly taught as part of my training to be a teacher or that I picked up tacitly as being self-evidently true. Maybe you believe some or all of these things to be true too. It's not so much that I think these statements are definitively wrong, more that the processes by which I came to believe them were deeply flawed. In education (as in many other areas I'm sure), it would appear to be standard practice to present ideological positions as facts. Like many teachers, I had no idea how deeply certain ideas are contested as I was only offered one side of the debate.

I'll unpick how and why I now think these ideas are wrong in Chapter 3, but before that I need to soften you up a bit. If the rest of the book is going to work, I need you to accept the possibility that you might sometimes be wrong, even if we quibble about the specifics of exactly *what* you might be wrong about. You see, we're all wrong, all the time, about almost everything. Look around: everyone you've ever met is regularly wrong. To err is human.

## Why we're wrong

In our culture, everyone is a critic. We delight in other people's errors, yet are reluctant to acknowledge our own. Perhaps your friends or family members have benefitted from you pointing out their mistakes? Funny how they fail to appreciate your efforts, isn't it? No matter how obvious it is to you that they're absolutely and spectacularly wrong, they just don't seem able to see it. And that's true of us all. We can almost never see when we ourselves are wrong. Wittgenstein got it dead right when he pointed out: "If there were a verb meaning 'to believe falsely', it would not have any significant first person, present indicative."<sup>1</sup> That is to say, saying "I believe falsely" is a logical impossibility – if we believe it, how could we think of it as false? Once we know a thing to be false we no longer believe it.\* This makes it hard to recognise when we are lying to ourselves or even acknowledge we're wrong after the fact. Even when confronted with irrefutable evidence, we can still doubt what is staring us in the face and find ways of keeping our beliefs intact.

Part of the problem is perceptual. We're prone to blind spots; there are things we, quite literally, cannot see. We all have a physiological blind spot: due to the way the optic nerve connects to our eyes, there are no rods or cones to detect light where it joins the back of the eye, which means there is an area of our vision – about six degrees of visual angle – that is not perceived. You might think we would notice a great patch of nothingness in our field of vision but we don't. We infer what's in the blind spot based on surrounding detail and information from our other eye, and our brain fills in the blank. So, whatever the scene, whether a static landscape or rush hour traffic, our brain copies details from the surrounding images and pastes in what it thinks should be there. For the most part our brains get it right, but occasionally they paste in a bit of empty motorway when what's actually there is a motorbike.

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\* This is the liar paradox. The statement negates itself and means nothing. Ironically, the problem of self-reference undermined much of Wittgenstein's thinking (and a good deal of the rest of 20th century philosophy).

## Don't trust your gut

Maybe you're unconvinced? Fortunately there's a very simple blind spot test:



Figure 1.1. The blind spot test

Close your right eye and focus your left eye on the cross. Hold the page about 25 cm in front of you and gradually bring it closer. At some point the left-hand spot will disappear. If you do this with your right eye focused on the cross, at some point the right-hand spot will disappear.

So, how can we trust when our perception is accurate and when it's not? Worryingly, we can't. But the problem goes further. French philosopher Henri Bergson observed, "The eye sees only what the mind is prepared to comprehend." Quite literally, what we are able to perceive is restricted to what our brain thinks is there.

Further, Belgian psychologist Albert Michotte demonstrated that we 'see' causality where it doesn't exist. We know from our experience of the world that if we kick a ball, the ball will move. Our foot making contact is the cause. We then extrapolate from this to infer causal connections where there are none. Michotte designed a series of illustrations to demonstrate this phenomenon. If one object speeds across a screen, appears to make contact with a second object and that object then moves, it *looks* like the first object's momentum is the cause of the second object's movement. But it's just an illusion – the 'illusion of causality'. He showed that with a delay of a second, we no longer *see* this cause and effect. If a large circle moves quickly across the screen preceded by a small circle, it *looks* like the large circle is chasing the small circle.\* We attribute causality depending on speed, timing, direction and many other factors. All we

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\* Describing these illustrations is frustratingly inadequate – you'd do much better to watch the online animation of Michotte's ideas here: <http://cogweb.ucla.edu/Discourse/Narrative/michotte-demo.swf>.

## Why we're wrong

physically see is movement, but there's more to perception than meets the eye. Consider how we infer causes to complex events: if we see a teacher teach two lessons we consider inadequate, we infer that they're an inadequate teacher.

This leads us to naive realism – the belief that our senses provide us with an objective and reliable awareness of the world. We tend to believe that we see objects as they really are, when in fact what we see is just our own internal representation of the world. And why wouldn't we? If an interactive whiteboard falls on our head, it'll hurt! But while we may agree that the world is made of matter, which can be perceived, matter exists independently of our observations: the whiteboard will still be smashed on the floor even if no one was there to see it fall. Mostly this doesn't signify; what we see tends to be similar enough to what others see as to make no difference. But sometimes the perceptual differences are such that we do not agree on the meaning and therefore on the action to be taken.

The existence of optical illusions proves not only that our senses can be mistaken, but more importantly they also demonstrate how the unconscious processes we use to construct an internal reality from raw sense data can go awry.

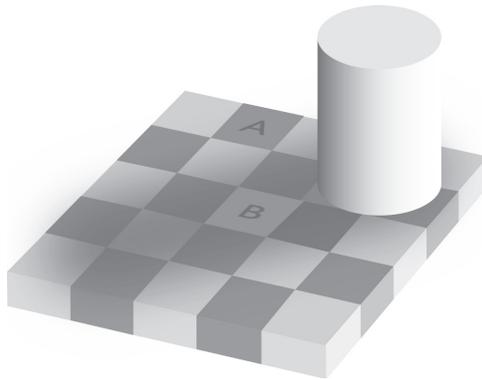


Figure 1.2. Checker shadow illusion

Source: [http://web.mit.edu/persci/people/adelson/checkershadow\\_illusion.html](http://web.mit.edu/persci/people/adelson/checkershadow_illusion.html).

In Edward H. Adelson's checker shadow illusion (Figure 1.2), the squares labelled A and B are the exact same shades of grey. No really. The shadow

## Don't trust your gut

cast by the cylinder makes B as dark as A, but because the squares surrounding B are also darker you may not believe it.

Here's a second version of the illusion:

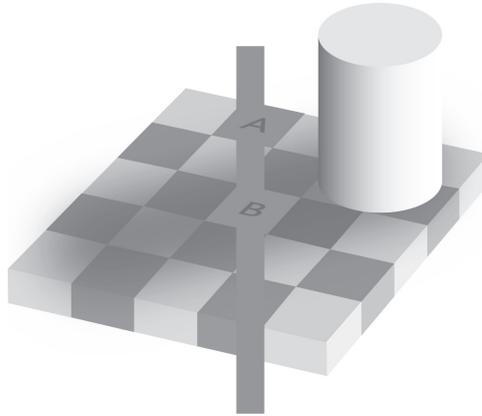


Figure 1.3. Checker shadow illusion version 2

Source: <http://persci.mit.edu/gallery/checkershadow/proof>.

We *know* A is a dark square and B is a light square. Seeing the squares as the same shade is rejected by our brain as unhelpful. We are unable to see what is right there in front of us. This neatly proves that there cannot be a simple, direct correspondence between what we perceive as being out there and what's *actually* out there. Our brains edit our perceptions so that we literally see something that isn't there. When I first saw this I couldn't accept that the evidence of my eyes could be so wrong. I had to print out a copy, cut out the squares and position them side by side in order to see the truth. Illusions like this are "a gateway drug to humility".<sup>2</sup> They teach us what it is like to confront the fact we're wrong in a relatively non-threatening way.

Here's another example. Log on to the internet and watch this video before reading further: <http://goo.gl/ZXEGQ7>.\*

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\* For those who can't be bothered to watch the clip, it shows two teams of basketball players, one team in white, the other in black. You are asked to focus on the white shirted players and count the number of completed passes they make but to ignore the players in black. Midway through the film, a man in a gorilla costume takes the stage, beats his chest and walks off.

The research of Daniel Simons and Christopher Chabris into 'inattention blindness' reveals a similar capacity for wrongness.<sup>3</sup> Their experiment, the Invisible Gorilla, has become famous – if you've not seen it before, it can be startling: between 40–50 per cent of people fail to see the gorilla. And if you have seen it before, did you notice one of the black T-shirted players leave the stage? You did? Did you also see the curtain change from red to gold? Vanishingly few people see all these things. And practically no one sees all these changes and still manages to count the passes! Intuitively, we don't believe that almost half the people who first see that clip would fail to see someone in a gorilla suit walk on stage and beat his chest for a full nine seconds. But we are wrong.

So is it never OK to believe the evidence of our own eyes? Of course there are times when we absolutely should accept the evidence of our own eyes over what we're told. If you had read some research which stated that children are safe in nurseries and were then to visit a nursery and see a child being slapped, it would be ludicrous to deny the evidence of what you'd seen over the research that refuted it. But we would be foolish indeed to draw any conclusion about all nurseries, or all children, based merely on the evidence of our own eyes. For the most part 'anecdotal evidence' is an oxymoron. We're always guessing and predicting several steps beyond the available evidence.

## **Cognitive illusions can be as profound as perceptual illusions**

Should we place our trust in research, or can we rely on our own experiences? Of course first-hand observations can sometimes be trusted. Often, if it walks like a duck and sounds like a duck, we should accept that it's a duck. But it's possible to be so eager to accept we're right and others are wrong that we start seeing ducks where they don't exist. It's essential for anyone interested in what might be true, rather than what they might prefer to be true, to take the view that the more complicated the situation, the more likely we are to have missed something.

Sometimes when it looks like a duck it's actually a rabbit.

**This is a book about teaching,  
but it is not a manual on how to teach.  
It is a book about ideas, but not ideological.  
It is a book about thinking and questioning and challenging,  
but it also attempts some possible answers.**

The hope is that you will consider the implications of being wrong and consider what you would do differently if your most cherished beliefs about education turned out not to be true.

David Didau has written a truly remarkable book. No other book that I know of manages to integrate an in-the-trenches classroom-teaching perspective with an accessible coverage of critical findings from cognitive-science research.

**Robert A. Bjork, Distinguished Research Professor, UCLA**

In short, this is my new favourite book on education. If I was still running a PGCE programme it would be required reading for my students, and I can think of no better choice for a book-study for experienced teachers. Anyone seriously interested in education should read this book.

**From the Foreword by Dylan Wiliam, Emeritus Professor, University College London**

The title indicates that David Didau is ready to smash idols. Fortunately for us, he creates more than he destroys, deftly assembling findings from the learning sciences to build a path towards more effective classroom learning.

**Daniel Willingham, Professor of Psychology, University of Virginia**

This is the kind of book you could read quickly, but probably shouldn't. You could read it ten times and each time find something new. There is a canon of about a dozen books that I recommend to teachers – most of which are cited in this one. My essential reading list has a new entry.

**Robert Coe, Professor of Education, Durham University**

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