Contents

Part 5: Choosing and using teaching methods

In which we look in detail at an ideal plan to teach a topic, looking at alternative teaching methods and how to use them

Part 6: Teaching intelligence

In which we see that intelligence is a range of skills that can be taught, and consider strategies to teach them

Part 7: What do the best teachers, schools and colleges do?

In which we see how expert teachers and the best schools get their incredible pass rates

Part 8: Your own evidence

In which we see how to improve our teaching, and find it's a bit scary, but fun

Part 9: The rational curriculum

In which we see what 'they' ought to tell us to teach, and find that if we teach it anyway, students do much better. But we find teachers have an awesome responsibility. You create the future

Part 10: Management and leadership

In which we find out how to improve the teaching of others in our team

1

We need evidence-based practice, not custom and practice

Some medieval farmers used to sprinkle ox blood on their fields at full moon, in the mistaken belief it increased soil fertility. What made them think it would work? If you had asked them they would have said, 'Everyone does it!' People often mistake common practice for best practice, and seem to prefer the comfort of the crowd to thinking for themselves using hard evidence.

Medicine was once the same: doctors bled patients suffering from anaemia, and administered bee stings to arthritic joints. Why? Because everyone else did, and all those doctors couldn't be wrong – could they?

Medicine and agriculture are now both 'evidence based', and it is time for education to follow their example. It is no shame to follow them; it is easier to work out how a liver works or how a plant grows than how a person learns. But we do know a great deal about how people learn now, and we need to change our practice accordingly.

Very successful procedures have been discovered without science in medicine, agriculture and education. We mustn't abandon our intuition or our own evidence; this is the final court of judgement, as we see in Chapter 23.

But isn't educational practice evidence based already? Hardly. For example, there are many teaching strategies that enable learners to do a grade or two better in assessments than more customary teaching methods. These highly effective methods don't take more time, though some require more skill from the teacher. Yet many of these methods are almost unknown in this country, and others are only rarely used, because teachers are unaware of their exceptional power. If education were evidence based experienced teachers would be using these methods frequently. They wouldn't be taken in by the initiative described just below either.

If the use of just *one* of these top performance methods can improve students' achievement by as much as two grades, imagine what would happen if an evidence-based teacher routinely used many of these highly effective methods in every lesson.

So what would teaching look like if we dropped the snake oil,* and took up the evidence? That is what I hope to show you in this book. I am convinced that by the end of this century people will look back at our present 20th-century practice and laugh – or groan – just as we do when we hear of 19th-century teaching. And they may envy us that we were born in a time when old methods were abandoned for exciting new and powerful ones, and when teachers had the challenge and fun of working out the teaching of the future. And seeing the results.

The future is in sight, but the path is not yet clear, and it is the present generation of teachers who will forge these new ways. That's you! Our students have a lot to gain, and so will the economy and social inclusion. We teachers have a lot to gain too, as the new methods often make teaching less tiring, and much more interesting.

What is evidence-based practice?

First let's look at what evidence-based practice is *not*.

Not long ago I had a very common experience that many of you will have shared, often many times. Someone with excellent educational credentials was describing a new educational initiative to me and to others. As I describe this below it may seem like an evidence-based approach, but it is little better than disguised snake oil.

The initiative was introduced with great enthusiasm by a man who fair-mindedly described both the advantages and disadvantages of the new approach in terms of the improvement in learning quality it could bring about. He persuasively and accurately argued that the advantages would outweigh the disadvantages. He quoted some acknowledged authorities citing a piece of research that had found a qualitative and quantitative improvement in students' learning when the initiative was tried in a pilot. He ended by exhorting us to join in with the initiative on the basis of the information he had just outlined.

Even if all the claims he made were true, this is not evidence-based practice, and implementing the initiative could be a wasteful distraction of the very limited time and energy available to teachers. What's wrong with this man's argument?

The mistake of evaluating something while forgetting to seriously consider its alternatives is extremely common in every walk of life. Those at the meeting will probably have made it very many times, with who knows what negative results. Had they been taught the 'rational curriculum' outlined in Chapter 24 they would not have made this mistake, and both they and their students would have been a great deal better off.

Let's use the methods that work best

As we will see later, syntheses of research by international experts like Professor John Hattie and Bob Marzano have shown us that the great majority of educational

*Snake oil – useless 'medicine' sold as a cure all

initiatives have positive effects on learning. Improving your handouts, team teaching, tutorials, peer assessment, computer-based instruction, and painting the classroom can all have a positive effect on achievement. But if you don't have the time to do them all, which will have the *greatest* effect? (Can you guess which ones? We will find out later.)

We are knee deep in strategies that could improve things for our students, so the question is not 'Will this strategy work?' but '*Which* are the most productive strategies to adopt?' Answering this last question has been the life work of academics such Hattie and Marzano. Thanks to them teachers can direct their precious time and energies to the variables, and the methods, that make the biggest difference to student achievement.

The 20–80 rule

Twenty per cent of what you do makes 80 per cent of the difference, so let's work smarter, not harder, by concentrating on the factors that make this difference.

Let's try to understand the learning process

It is one thing to know what methods work, quite another to understand why. Without understanding why they work we are most unlikely to use them effectively. We will also be unable to criticise constructively our own and others' practice.

Thanks to ingenious theorising backed up by rigorous experiments in neural physiology, psychology, social psychology, cognitive science and elsewhere, we now understand a great deal about why we learn, how we learn, and consequently what can help us to learn.

Let's find the problems and fix them

Using the teaching methods that are known to work best, and understanding how they work in terms of brain science, is only part of evidence-based practice. Research reviews can only tell us how the *average* student learns best. But this ignores the contexts in which you teach, and the problems these can cause.

Each of our students is unique, and while they will benefit from the methods that work best they will also have unique needs. Other contextual factors also come in to play: your subject, your institution's tutorial system, the prior learning required for success in your subjects, your favourite teaching methods, and so on. These introduce factors that need addressing if your students are to learn at their best.

For example, if your guidance and selection system sets the bar too low when deciding which students are allowed on to your A-level course, then you may get poor attainment almost no matter what teaching methods you use, and no matter how well you understand the learning process. No initiative will fix this poor attainment, except improvement to your selection procedure. We need to find the

contextual factors that most contribute to success on your courses, diagnose any problems you are experiencing with them, and fix these. This is another arm of evidence-based practice that we will look at.

Principles of evidence-based practice

There are four principles of evidence-based practice; at least one of these is often ignored in most arguments that attempt to justify educational practice. *All* these principles need to be taken into account in evidence-based practice.

1 You need all the evidence to make sound decisions

a In order to evaluate an educational initiative or strategy, *you must compare it with any alternatives* that might achieve the same goals. However good a strategy, there may be another that is even better! As we will see, it is now possible to compare the effectiveness of strategies using average 'effect sizes' and other approaches.

b You need the views of *experts* who have looked at *all* the research and weighed *all* the arguments to reach their conclusions. This is necessary because one piece of research is often contradicted by another.

2 It is not enough to know what works, you need to know why

If you use a highly effective teaching strategy blindly you are most unlikely to get the best out of it. You must understand *why* it works to mine its full potential. When you teach you react constantly to the situation in the classroom, and it is your understanding of the teaching situation and what your methods should achieve that guides these crucial decisions.

3 You need to find the critical success factors that are failing in your teaching context and fix these

'Context is all' in understanding many problems that inhibit attainment. This is considered mainly in Chapter 25.

… react constantly …

4 You need to review your teaching constantly in the light of the evidence above

The final court of judgement is not academic research, but what works in your classroom. Trust your own judgement! Try a new strategy a few times, learn from these experiments and adapt, but in the final analysis the best evidence you have is your own experience. So you must keep your practice under continual review and become a 'reflective practitioner'. This is considered mainly in Chapter 23.

… experiment with graphic organisers …

Evidence-based teaching does not dictate what you should do; it just shows you how best to achieve your own values, priorities and goals. You will still need to provide the creativity and judgement needed to decide on the best methods, and how to apply them within the context of your own teaching. Evidence-based practice re-professionalises teachers, giving them control over initiatives to improve learning, even giving them control over the most important part of the curriculum – thinking skills – as we will see in Chapter 24.

It makes sense to adopt the strategies that are known to have the greatest average effect on student achievement and to understand why these methods work, and to adopt strategies that meet the unique needs of our learners, our subject, and other important contextual factors. To do this effectively we need evidence. Let's look at what evidence is available to us now.

We want the truth … (evidence rather than tradition, hard sell from those with power or financial interest, or personal opinion, even authoritative personal opinion)

The whole truth … (all the evidence, e.g. research reviews from all schools of research)

And nothing but the truth (no exaggerations, bandwagons, unexamined prejudices, and certainly no snake oil!)

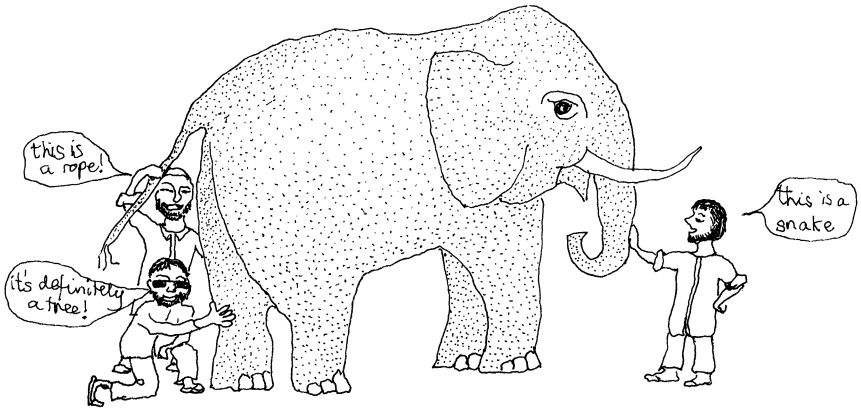
But getting the truth is far from easy, so we need to keep an open mind. Thanks to more effective research we are learning fast, and the best evidence available can only give us the best guess so far. Medical and agricultural practice changes as new evidence becomes available; education should be the same.

Contradictions and agreement between our sources of evidence

Different sources of evidence sometimes lead to different conclusions, as we will see in Chapter 9. However, we need the whole truth, so we need to listen to *all* these sources, and take what we find useful from each.

This situation is reminiscent of the Indian parable of the six blind men examining an elephant:

> One feels his side and says 'an elephant is like a wall'.
> One feels his tusk and says 'an elephant is very like a spear'.
> One feels his trunk and says 'an elephant is very like a snake'.
> One feels his leg and says 'an elephant is like a tree'.
> One feels his ear and says 'an elephant is like a fan'.
> One feels his tail and says 'an elephant is like a rope'.



The moral, of course, is that if we only look at part of the evidence we are bound to get a partial and so inaccurate view. A fun poem by John Godfrey Saxe (1816–87) tells this tale and concludes:

> And so these men of Indostan
> Disputed loud and long,
> Each in his own opinion
> Exceeding stiff and strong,
> Though each was partly in the right,
> And all were in the wrong!

(The full poem by John Godfrey Saxe can be found at Duen Hsi Yen's website: www.noogenesis.com/pineapple/blind_men_elephant.html.)

In practice good researchers often ignore the neat boundaries between different sorts of evidence and different approaches to research. We will find remarkable agreement between different schools, for example in Chapter 22.

How this book is organised

Please have another look at the contents page of this book, and read it right through, especially the italics. It will really help you to understand how this book is organised.

Further reading

Brown, G. and Atkins, M. (1988) *Effective Teaching in Higher Education*, London: Routledge.

Gibbs, G. (1992) *Improving the Quality of Student Learning*, Bristol: Technical & Educational Services.

Hattie, J. A., 'Influences on student learning'. This can be downloaded from Professor John Hattie's staff home page: www.arts.auckland.ac.nz/staff/index.cfm?P=5049.

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Petty, G. (2004) *Teaching Today: A Practical Guide* (3rd edition), Cheltenham: Nelson Thornes. See also www.geoffpetty.com.

Ramsden, P. (1992) *Learning and Teaching in Higher Education*, London: Routledge.

Westwood, P. (2003) *Commonsense Methods for Children with Special Educational Needs: Strategies for the Regular Classroom* (4th edition), London: Routledge-Falmer.

Review of reviews: a report by Charles Desforges can be downloaded from: www.tlrp.org/pub/acadpub/Desforges2000b.pdf.

For publications and research on education issues and evidence-based practice: www.ascd.org.