Know your limits

There's an overwhelming quantity of educational research literature out there – only a fraction of which is actually important for teachers to know, argues **Colin Foster**...

Do you ever feel guilty for not being more knowledgeable about the latest developments in education research?

Perhaps you're one of those teachers who'll happily dip into the research literature from time to time, in the hope of finding some useful information that might improve your teaching in some way.

Often, however, seemingly relevant articles can be hard to access, locked behind paywalls or turn out to be written in near-impenetrable jargon. And even when you *do* manage to decode what they're saying, they will frequently seem to state the obvious – things that surely every teacher knows, and has been doing every day of their career.

Conversely, there will be some studies and papers addressing questions that no teacher ever thinks or cares about, with little practical relevance to the classroom. Given all this, why do any of us bother?

Useful knowledge

It's worth considering what kinds of technical and research knowledge pertaining to education would actually be useful for teachers to have. Knowledge is always a good thing, of course – gaining knowledge is never going to make things worse – but given the many demands on teachers' precious time, what kinds of information from the research literature should teachers prioritise finding out more about? And how much of it will really matter to classroom teachers?

I was thinking about this recently, as I've been learning to swim. I can't presently swim, but I do have a science degree, and know plenty of theory about how floating and sinking and swimming work. In this respect, at least, I'm the classic 'armchair expert' who is of no use in practice.

I take lessons with a very good swimming teacher who is highly experienced and came well recommended. To be clear, I have no problems with him at all.

However, I've noticed lately that he seems to display some of the classic misconceptions around floating and sinking that are well known to school science teachers.

> **"Empirical generalisations are more useful to teachers than the latest scientific theories"**

For example, he told me that it's easier to swim in deeper water, since there's more water underneath '*to hold you up*'. This isn't how floating works, and is a common misunderstanding, possibly stemming from the (true) fact that air pressure is lower at the top of a mountain because there's less weight of atmosphere pushing down on you from above.

In case you're wondering, no, I didn't try to correct him! Maybe he's right that it is somehow easier to swim in deeper water. I imagine he would know about something like that – but even if he is correct, his explanation for it is still wrong. And this got me thinking – *does that matter*?

It's better to be right than wrong, of course. But would he be a superior swimming teacher if he had better scientific knowledge regarding such phenomena? Would it make much, or even any difference at all?

Empirical generalisations

We see this sort of thing all the time. A driving instructor will explain to the learner how the car's gears work, to help the learner make better use of them. The learner happens to be a garage mechanic, and knows that the instructor's explanation is a bit wrong – yet the instructor has nevertheless become a very good driver, presumably in part by basing their gear changing on this wrong understanding. Similarly, my swimming teacher has become a very good swimmer – and perhaps swimming teacher – without his misconception seeming to do him much harm.

The psychologist Daniel Willingham has argued that the most useful kind of knowledge for teachers are what he calls *empirical generalisations* (see bit.ly/ts137-TK1) – well-evidenced truths about the nature of learning, manifested consistently across many different

research studies.

Some of these will be obvious things that every teacher already knows, such as that performance of a given task will improve with practice.

Conversely, other empirical generalisations may seem counter-intuitive, such as desirable difficulties – how making practice harder by mixing up topics leads to lower scores in the short term, but better long-term learning. You might not guess that if you hadn't heard about it.

Willingham argues that empirical generalisations are more useful to teachers than the latest scientific theories, because those theories won't have yet been conclusively verified. When you next read about some cutting edge study with headline-grabbing findings, you should remember that one study is only ever just one study. And one study might say anything.

What is of more importance and value is the overall message that emerges across many studies that have been conducted within a particular area, where the noise within each separate study will hopefully be cancelled out to reveal a more reliable overall trend.

Confidence, not guilt

If you're doing a good job in the classroom, then most of what you absolutely need to know, you probably already know. If your students are learning well and are confident in the subject, you must be getting a lot of things right.

So, if someone then comes along claiming that they have some new research that should drastically change what you do, I'd be very suspicious indeed.

Marginal gains on top of your existing practice? Those are good. Some interesting new ideas for you to consider? They may be worth looking into. But rethinking everything dramatically? That sounds dangerous.

Instead of feeling guilty about all the research you aren't reading, and wondering constantly about what amazing practices might be out there that you're unaware of, be confident instead in your own practice.

Prioritise the reading of literature that seems likely to provide empirical generalisations across a whole body of research, rather than cherry-picking single studies. Look for small ways of making incremental changes, rather than risking throwing out the baby with the bathwater amid drastic, 'big bang' implementations of novel practice.

Fluid dynamics may be interesting, but even an Olympic swimmer doesn't need to be able to solve the Navier-Stokes equations (differential equations which describe fluid flow). Knowledge is good, but some bits of knowledge have much more leverage than others.

When you're a passenger on an aeroplane, you'd be grateful if the pilot understands the basics of how planes fly, but you wouldn't expect them to be able to rebuild a jet engine themselves.

Similarly, your students don't expect you to know every latest learning theory, but rather to have the practical knowledge and wisdom acquired from experience needed to do a great job in the classroom.

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