

So much talk about ‘the brain’ in education is meaningless

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You may have noticed a steady increase in the use of brain-based language in education recently. You may also have noticed that, beyond the creation of some lucrative learning tools, this language hasn’t done much to meaningfully add to the teaching/learning discourse.

The reason for this is simple: although impressive sounding, the majority of educational references to the brain are devoid of any original, unique or prescriptive value. They are what we have come to call ‘neurosophisms’. ‘Neuro’ meaning neuron or nerve, and ‘sophisma’ meaning ‘clever device’, a neurosophism is a sophisticated but fallacious application of neuroscientific language. To get a sense of what we mean, here are a few of the more common types of offences.

The first type we’ve termed the *Sleight of Hand*: when someone coyly sneaks an ultimately meaningless neuroscientific term into a phrase in the hope it will add prestige and weight. Here’s an example: “When learning activities are repeatedly linked to enjoyable experiences, students’ brains learn to seek out those activities.”

Now remove the word “brains” from the sentence above and re-read it. Does the meaning change at all? Is any information lost or gained by removing the reference to neuroscience in this context? Did the inclusion of neuroscience in this context teach you anything meaningful about the brain, or was it simply decorative?

The next type of neurosophism is called the *Rebadged Car*: when someone takes a well-understood piece of information, repackages it in neuroscientific language, and tries to sell it as something new.

“You can’t think when you’re stressed, you can’t learn when you’re anxious and that’s one of the primary principles of the neuroscience ...”

What’s implied in this sentence is that, prior to the emergence of neuroscience, teachers were blissfully unaware of the effects of stress and anxiety on learning. The truth is, this relationship has been understood for decades (if not centuries) and was exhaustively explored in labs and classrooms throughout the 1950s.

Another type of neurosophism we call the *Bait and Switch*: when someone says cited research is neuroscience, but it truly derives from a different (typically behavioural) field. Here’s an example: “Brain research shows that people learn better when new concepts are tied to what students already know.”

Although this might seem similar to the Rebadged Car, there is a subtle difference: in this instance, the research referenced as being conducted by neuroscientists was actually conducted by psychologists without any neural measure. Essentially, readers were promised information about the brain but, instead, were delivered information about behaviour.

The final brand of neurosophisms are known as *The Untouchables*: when someone presents a vague, ill-defined neuroscientific measure to assess an important educational outcome.

“[the] true self is obviously one in which neural network development has been maximised ...”



Most teachers will never see their students’ brains in action. So what are we to make of propositions that pair a desired educational goal (“true” students) with an outcome impossible for the majority of teachers to measure (neural network development)? Even if teachers were able to directly measure neural development, how would they ever determine if the changes produced were “maximised” or otherwise?

How to spot a neurosophism

The next time you read something about neuroscience and education, there are a few simple questions you can ask to inoculate yourself against ultimately meaningless propositions:

- Can I replace the word “brain” with the word “student” without losing any meaning? If so, there is no need to defer to neuroscience.
- Is this finding new? Or has it been a part of successful teaching practice for years? If the latter, there is no need to

defer to neuroscience.

- What type of research is being used to prove the point? If the answer is psychological, educational or otherwise behavioural, there is no need to defer to neuroscience.
- Does the proposed outcome represent a truly meaningful and measurable value? If the answer is no, there is no need to defer to neuroscience.

The errant use of neuroscientific jargon may seem innocuous, even humorous. But the consequences can be serious: if we know something works to enhance student learning or wellbeing, then we should name it and do more of it.

Attributing an intervention’s success to something else that may not actually confer that benefit – in this case, generic neuroscience – makes it more likely that educators and policy-makers will waste time and resources exploring ultimately fruitless avenues of inquiry. This robs our students of that opportunity for success – and that’s no laughing matter.

There is no doubt the brain is an incredible topic and there is a growing sense of excitement about the implications of neuroscience for education. However, it’s important we don’t allow this excitement to cloud our judgement – and ridding the discourse of neurosophisms will no doubt be a step in the right direction.

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