

Consciousness and unconsciousness in teaching and learning:

Do we really think too much?

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This study considers the emerging issue of consciousness in pedagogy both theoretically and practically. It examines why this issue is of fundamental significance for teaching and learning. Basic assumptions are clarified and the psychological and philosophical fundamentals of consciousness theory explored. Some surprising and counter-intuitive conclusions are reached. It is shown that in the partnership between consciousness and unconsciousness the latter is likely to be senior. Consciousness is probably entirely illusory, but is nonetheless probably indispensable, socially and cognitively. The radically different characteristics, capacities and potentials of consciousness and unconsciousness are considered and their roles in learning debated in the light of these radical differences. A distinction is made between learning detail and understanding meaning and it is suggested that one is naturally an unconscious task, the other conscious. The important fundamental pedagogical implications of our deployment of students' consciousness are debated using as example the teaching of homophone spelling.

Why consider consciousness at all?

It's ten to seven in the evening. Coming into the ABE classroom my eye is caught by a new poster on the wall. It's hand made and has cost somebody much effort. Headed "**homophones**" it showcases just three words: "**their**", "**they're**" & "**there**". My most profound reaction to the sight of this poster is personal anxiety and professional discomfort. What about yours?

I was learning a new language, as an adult, when I first noticed that anxiety could be induced by a teaching approach. Presented with overt grammar in the new language, I felt powerfully discomfited. My mind resented (and resisted) what it clearly experienced as an imposition of an unnatural mental practice. Conscious grappling with grammatical rules, explanations and conventions grated and chafed. It felt, quite literally, as if my mind was being 'rubbed up the wrong way'. Anxiety was an unmistakable response.

It dawned on me that 'I' (by which I now understand I mean my conscious) was being deliberately focussed on aspects of this new language of which I was cheerfully unconscious in my own. (I 'know' very little English grammar - how much do you?) The more this happened, the more anxious and intimidated I became. Since this experience I have observed the same anxiety and incipient disempowerment being engendered in students presented with overt 'rules' and 'explanations' of common language skills, patterns and conventions - often exactly those they already deploy rather well in practice, as I do the grammar of my own language in spite of my apparent ignorance of it.

Perhaps there is a fundamental lesson in such observations, especially for teachers. I want, here, to consider the usefulness (or otherwise) of consciousness in the classroom - to examine the possible roles of consciousness and unconsciousness in the learning process and the potentially fundamental difference between them. This seems to me to provide a constructive and very practical new way of looking at our teaching, one which explains a lot of our 'gut feelings' and enables considerable forward movement, as I hope you will shortly agree. The greatest

impediment to our understanding of this issue, though, is our own common sense which tells us, absolutely wrongly as it turns out, that we are creatures of conscious will living consciously observed and consciously directed lives (Wegner 2002). In this paper, therefore, I seek to undermine our misguided faith in, and overestimation of, our conscious, but I also seek to bolster our reverence for, and joy in, our matchless (but modest), and scandalously underestimated unconscious.

Let us take a speculative and wary ramble towards the borders of psychology and philosophy. The undergrowth is tangled and high in this part of the intellectual world, as a quote or two will confirm. “The nature of consciousness has proved ... elusive, ambiguous and questionable” (Smith & Jokic 2003 p. 1); “Without consciousness the mind-body problem would be much less interesting. With consciousness it seems hopeless.” (Nagel, in Block *et al* 1997 p. 519); “There is a feeling of intense confusion, but no clear idea about where the confusion lies.” (McGinn in Smith & Jokic 2003 p. 397); “Consciousness is a fascinating but elusive phenomenon: it is impossible to specify what it is, what it does or why it evolved. Nothing worth reading has been written about it.” (Sutherland in Block *et al* 1997 p. 8)

We are on uncertain terrain here, in an environment where psychologists turn into philosophers who abhor simplicity and to whom ‘common sense’ is anathema. At least I can humbly follow their example by immediately making my basic assumptions clear.

Fundamental assumptions:

I shall claim that there are (at least) two aspects of the unconscious: that there is a Freudian unconscious (that odoriferous collection of passions, repressions, egos and ids) and that there is a *cognitive unconscious* which deals with the mechanics of everyday mental activity, the nuts and bolts ‘how do we do that?’ questions. What actually goes on when we read or spell, for example? How do we do it? This cognitive unconscious is what I will mean in this article when I say ‘the unconscious’. I shall use the word ‘mind’ when I want to refer to mental activity (of which we may (or may not) become conscious) and the term ‘brain’ when I want to refer to the machinery which contrives this for us. I shall say ‘conscious’ when I want to indicate mental activity of which we are aware *and aware that we are aware* (technically, this is *phenomenal*, or *P consciousness*) and I shall use the term ‘unconscious’ for all such activity of which we are *not aware, or not aware we are aware*.

I will assume that we agree there must be a physical, neurological basis for every mental phenomenon – that all thought or experience arises in the brain and is the result of activity among its circuits. I will further claim that the mind exhibits *intentionality* - that “The central feature of mental states is their semantic aspect, or intentionality: the fact that they are *about* things in the world.” (Chalmers 1996 p. 19 his emphasis.) “The mind’s pervasive ‘aboutness’ is rooted in the brain’s storytelling attitude ... [it] naturally weaves wordless stories.” (Damasio 2000 p. 189.)

This intentionality is very important to teaching, and so to our story. Crane takes it further: he describes the state of intentionality as being “... the mind’s direction or directedness upon its object” (Smith & Jokic 2003 p. 37). An *intentional object* is “... just whatever one’s intentional states are directed on” (ibid p. 37). And an intentional object (which may be real, like a piece of toast, or unreal, like a dragon) always has *aspectual shape* – it is “... always presented under a certain aspect, or in a certain way. There is no such thing as simply thinking about an object ...” (ibid p. 38). Objects always have an intentional *context* – the piece of toast is the one I ate this morning, say, never a context-free piece of toast encountered in a mental vacuum. “Every intentional state ... consists of an intentional content related to the subject by an intentional mode.” (ibid p. 39.) It is, in short (and crucially for teachers) *personally meaningful*.

It is possible to have non-intentional mental states. These have no object, are not directed at anything and may even have no 'aspectual shape', or context. Such a state is a *quale* - a pure sensual experience such as the feeling of pain or the experience of the colour red. *Qualia* are sensual experiences. We shall here, though, consider only intentional states which are 'about' something.

And both intentional and non-intentional states may be unconscious or conscious. I may not be consciously aware of the colour of the grass in the park, but I would become so if it turned pink – indicating that I must have been aware of its colour all along, albeit *unconsciously aware* (technically, in *Access*, or *A consciousness*). While in the park I may also unconsciously 'chew things over' (consider intentional objects) – I may 'wake up to' a solution to a problem when I get home with no conscious awareness of having thought about it. (The theory of relativity, for example, is said to have occurred to Einstein while he was daydreaming one drowsy summer afternoon.)

Next, can we agree that there is some purpose to consciousness; that it exists for a reason or reasons? A *conscious inessentialist* regards consciousness as pointless, as an accidental by-product of the brain's immense complexity with no functional role. I can see the fun in this idea, but cannot quite bring myself to believe it. My own notion of the conscious/unconscious partnership is that it is a real one, in which both partners have purpose, but that the unconscious is absolutely the senior partner and controls and instructs consciousness, invoking it only when it suits its own ends (or those of the partnership). Our conscious is managed by and for our unconscious, for its own, often inscrutable, purposes.

The hard question:

There are two questions philosophers of consciousness face - the easy one and the hard one. The easy question is *how?* How do 1500 grey grams of soggy, unprepossessing nervous tissue produce consciousness? How, in better words, is the "water of the physical brain ... turned into the wine of consciousness"? (McGinn in Smith & Joki p. 397.) People already talk of reverberations and oscillations, the reticular activating system and thalamo-cortical loops. One day we will know, at least in principle. The hard question, though, is *why?* Why does consciousness exist? Why does the brain produce such a range of spectacular experience – a mind so vividly aware of so much. What is consciousness for?

There seem to be two main theories: one that the purpose of consciousness is social and another that it is cognitive. Both could be right, of course. We are considering the latter but let's just glance at the former. The social value of self-awareness, however illusory consciousness really is, may be precisely the awareness of being a sentient being who is aware of being a sentient being, being self-aware - the famous 'theory of mind' (ToM). Without a ToM in respect of myself, how could I have one in respect of you? Without this awareness of self and so of others, without this ToM, how could we have developed complex societies? (Wegner 2002.)

What is *cognitive* consciousness for, though? At first glance this seems a silly question. It seems perfectly self-evident that 'I' am in absolute control of 'my' thoughts and actions. This 'I' who is so in control is, naturally, my conscious, aware self. It seems preposterous, perhaps even pointless, to question the belief I have lived with for so long, so successfully and for which I seem to have such incontrovertible, if circumstantial, evidence. We feel as if we live within our conscious, as if we are our conscious, because it is, of course, the only mental activity of which we are aware. Because of this, we see all intellectual activity as conscious activity, consciously managed. If we think about it at all we envisage the unconscious as managing all the low level, automatic stuff - enabling us to walk and chew gum at the same time, for example. We imagine all real thinking, all thinking of 'higher' value, is done in our conscious. How could it be otherwise, we cry?

The illusion of conscious will:

This is where reality seems to flip into mirage and vice versa. You think you are reading this with your conscious mind. It certainly feels as if I am writing it with mine. However, this is only a fabulous illusion. Both logic and experiment reveal this initially rather disturbing truth very clearly. Conscious thought is a phenomenon of considerable complexity. It is, necessarily, a constructed phenomenon and the only place it can be constructed is in the unconscious. Every 'thought' is, of necessity, formulated first in our unconscious (and only a few ever become conscious). This truth is, sadly, inescapable (Nørretranders 1998, Wegner 2002). Consciousness is a virtual 'reality'. It is an illusion (Wegner 2002). This does not mean it can have no role in life, and in learning, but it does mean we will be wise to consider with some care what such a role might be. (Useful general texts include Block et al 1997, Chalmers 1996, Dennett 1996, Metzinger 1995, Nørretranders 1998, Smith & Jokic 2003 & Wegner 2002.)

We actually live in our unconscious. We *are* our unconscious. It is our unconscious which is 'in the world'. It is our unconscious which does our mental acrobatics. We become conscious of only a tiny fraction of the results, if at all. It is not clear why this happens, not clear how useful, or otherwise, this consciousness of ours really is. It sometimes seems to be a rather pointless (and only intermittent) accessory, in fact, dealing in a rather second rate manner with second hand material already managed perfectly well in the unconscious. (And many traditions are very much less uncritically enamoured of consciousness than we are. Zen masters, for example, deliberately seek 'no-mind' in order to reach the clarity of 'mindfulness' - they specifically seek to suppress the hectic conscious in order to reach and exploit the calm, trustworthy and naturally intelligent depths of their unconscious.)

My conscious can only handle refined, developed, meaningful concepts. (Even something as apparently simple as our aforementioned piece of toast is an intentional object of considerable conceptual and contextual structure. It has a plethora of aspects, all realised when it is consciously considered.) All such mental concepts are, by definition, *constructs*. They are constructed from countless, absolutely minute pieces of data. These myriad data are almost completely meaningless in themselves. Someone has to gather them, identify them, prioritise them, correlate them and make meaning from them; condense and simplify them into concept. Only my unconscious can do this. It is a task which is well beyond my conscious.

Vision will do very well as an example. Literally millions of 'bits' of visual information pour into my brain; a mass, or mess, of details of light and dark, intensities and colours, edges, surfaces, curves and corners, some of it changing from moment to moment. There is light and shadow, stillness and motion, greys, browns, greens, yellows and blues. My long-suffering brain sorts all this out unconsciously, 'I' don't know how, and gives me the answer. After ferociously complicated computing (as researchers into vision find, to their cost and alarm, when they try to model it) my unconscious is able to tell my conscious that I am looking at a blue tit skipping around in the depths of a privet hedge. A complexity of detail has been reduced to a simplicity of concept; a *meaning* of which 'I' may (perhaps) be made consciously aware.

We have immediately to admit that 'I' - my conscious self - cannot have taken in, never mind processed, all this detail, the endless torrent of tiny particulars which is managed so casually by my unconscious. There is simply no way the conscious could direct all that detailed circuitry which, after all, it knows nothing about. We are driven to accept that 'I' would be utterly unable to function without 'my' fabulous unconscious digesting, analysing and representing reality for 'me'. It follows, I am sorry to say, that whatever 'I' consciously experience, feel or think at any moment must already have been experienced, felt or thought by my unconscious. Not only that, of course, but it follows from this that whatever my conscious is experiencing, feeling or thinking is simply a presentation given by my unconscious.

And it follows, logically, that there is a delay between events in the unconscious and their (possible) arrival in the conscious. This gap has been measured and turns out to be 300 – 500 msec - close on half a second (Nørretranders 1998). Our unconscious is ahead of our conscious by this small half second, and it always will be.

To recap thus far: everything in our conscious mind has already been managed in our unconscious. Whatever is in the conscious can only, ever, be whatever the unconscious has assembled from data, and by means, only it understands. My conscious experiencing of 'reality' is inevitably (and literally) an afterthought. It is history. It happened a little under half a second ago. The representation of reality for us by our unconscious is all we can ever be aware of. There is nothing else. We do not, and cannot, consciously experience reality directly. We never will. What we consciously experience is always a reconstruction. It could be nonsense and is indeed sometimes simply wrong (for example, when viewing magicians' illusions we may clearly 'see' the laws of physics broken). Consciousness is probably directed by our unconscious, for its own enigmatic purposes. It seems to be about either pure experience (qualia) or meaning. Why it exists at all remains unclear.

Consciousness & unconsciousness – how different are they?

We are discussing our conscious and unconscious as if they are distinct and different creatures, but are they? Bearing dutifully in mind that the psychology of consciousness is in its infancy, and 'facts' are thin on the ground, we can nonetheless discern likelihoods and possibilities clearly enough for useful debate. And the conscious and the unconscious really do seem to be radically different. They seem to use radically different processing paradigms, and they seem to have radically different processing capacities. They seem to do things differently, and to be differently effective in different domains.

Our problem, of course, is that our unconscious is absolutely hidden from us. Frustrated psychologists refer to it as "the black box". We cannot look inside. The best we can ever do is to infer from various outputs or behaviours what may have been taking place within. The wildest experimental approach allows only an indirect view of unconscious processes.

Estimates have been made of the relative size and abilities of the conscious and the unconscious (Nørretranders 1998). I guess we should not take them too seriously but they are probably of rather approximately the right order, near enough to a 'truth' of some kind. At any rate, it is estimated that the unconscious processes some eleven million 'bits' of information per second, the conscious about sixteen. The unconscious may, in other words, be able to deploy about seven hundred thousand times the processing power of the conscious.

Not only that, but the two mental 'organs' use radically different processing paradigms. The conscious seems to process information slowly and serially, one item at a time, one plodding snippet after another. The unconscious, by contrast, processes information very rapidly, in a massively parallel, all-over-the-brain-at-the-same-time and incalculably interconnected way. The conscious, to draw an imperfect analogy, functions like a single, and rather basic, computer whereas the unconscious behaves more like a huge number of computers connected together at all times, all able to function and communicate simultaneously.

Your conscious and your unconscious, in other words, seem to be very different creatures. Your unconscious is enormous, fast, global, holistic, silent and smart. Your conscious is tiny, ponderous, local, serial, loud and limited. Your unconscious probably supplies, organises and directs your conscious, but consciousness and unconsciousness probably operate radically different learning paradigms and learn in radically different ways. They probably even learn radically different things and perhaps they evolved to do exactly this.

Consciousness and meaning:

I hope our common sense belief in the power and apparent importance of consciousness and the correspondingly apparent insignificance of unconsciousness has been shaken sufficiently for us to address some important classroom issues from the lively potential of our new, but invaluable, uncertainty. Could consciousness be a sort of reverberation - is 'awareness' an amplification system of some kind - which the unconscious can call upon at will? Could the purpose of this extraordinary facility be concerned with understanding the broader and more important *meanings* of life? Is consciousness for grasping structures, for 'seeing' frameworks, correlations and connections?

Consciousness, it seems to me, is strongly repelled by, and has enormous difficulty with, meaninglessness. It reacts to it with dismay and anxiety. What it likes is the "Oh, yes!" of life. It enjoys *comprehension*, not nitty gritty detail. (To me, subjectively, data feel literally gritty.) Most fine detail, most raw data or pure convention is, in and of itself, meaningless (overt grammar and spelling rules are very good examples). Is this why having to consider it consciously, and especially to learn it consciously, feels so unnatural and threatening?

The unconscious is a different matter altogether. Awash in data all day every day, it lives by managing trivia. It's what it does. It can be presumed to be at ease with the crunching of data, with the task of apprehending details, filing them, finding them again to order and building meaning with them.

Perhaps the key idea here is *role*. Perhaps the roles of consciousness and unconsciousness are radically different. If so, this matters because, although it is almost certainly an illusion that we can (consciously) direct our own consciousness, it can be very easily directed for us - for example by focussing us onto particular behaviours in particular situations. If directed, for example, to memorise stuff we consciously try to do that; if asked to categorise it we do that instead. As teachers we direct other people's attention all the time. Teaching is the direction of people's consciousness in particular ways. This direction is, or should be regarded as, a heavy responsibility! Perhaps we need more formally to consider how we can focus students' consciousness most appropriately, more formally to consider the principles behind our direction of attention in everyday learning situations, more formally to consider implicit and explicit learning (Reber 1993) and how each may be most appropriately deployed in particular learning situations and for particular learning purposes.

Imagine a revealing memory experiment. (Baddeley 1982) One group of subjects are asked each to memorise some 50 words on 50 cards in a limited time. A second group are not asked to memorise at all, they are asked only to sort their exactly similar cards into semantic categories over the same limited time. (The words on the cards fall, if you are but invited to look, into a few distinct categories such as names of sports, foods, animals, occupations.) Both groups are then asked to recall the words on their cards. The categorisers, as you will already have suspected, will recall many more words than do the memorisers. Why? Perhaps the memorisers perform less well at least partly because their conscious attention is directed at (and taken up by) a task without any inherent meaning. The categorisers' conscious attention, by contrast, is directed at *finding some meaning* among the items. They easily (albeit inadvertently) remember many more of them precisely because of the meaning they have found among them. The striking pedagogical difference between the subjects in these two groups is that their conscious attention is focussed *by the researcher* in radically different directions and made *by the researcher* to do radically different things with data.

In a similar way, my own ability to write words in which the letters c, i & e juxtapose has been compromised by a teaching approach hijacking my consciousness and attaching it forever to a

spelling rule. (i before e is no help to me ...) I am a fairly good speller - at least I am an automatic speller of almost all the words I use. I do not, usually, 'think about' spelling at all - consciously - until these three letters turn up together. At that point I have to leave author mode and consciously consider spelling detail. I have to retrieve and chant that silly verse. It is an infuriating, and manifestly unnecessary, handicap. 'Receipt' is a perfect example of the unhelpful effect; the strange, irregular, foreign 'p' in there I write without 'thought' of any kind. It simply arrives at my pen, 'I' don't know how. By contrast, the far more regular i & e waste my time, wear out my brain and disrupt my flow. I am very glad I 'know' just that one spelling rule. I am very sorry that my teacher did too, and directed my attention so forcefully to it as to forge an everlasting, mandatory link between the letters i, e, c and my consciousness. I wish she had not so vigorously taught it as a 'spelling rule' to be consciously learned. I wish she had left it to be learned as a pattern so that it could be filed as such in the same way I presume (but do not know) all my (and her) other spelling patterns are filed. (Kerr 2008: especially notes to chapter 5 & "roots: ar thay enny uce")

In practice ...

To go back to the homophones "*their, there & they're*" on that poster in my classroom. Their homophonic similarity is not authentically meaningful in the real world. It is conventional, accidental and random. There are orthographic meanings associated with the words individually but together, and as presented (purely in phonic terms), there is nothing to interest a meaning-seeking consciousness and plenty to confuse and intimidate it (now and forever). There is no traction in consciousness for this material thus offered. A much better approach would be to direct attention at *meaning*.

First we must separate these three items from each other such as to avoid confusion one with another – we will teach them on completely separate occasions. Then we will teach what is genuinely orthographically meaningful - in the case of '*there*', for example, this is the fact that a common pattern is within (h-e-r-e) and that this pattern is also found in 'here' and 'where' (+/- 'anywhere', 'everywhere' & 'nowhere'; perhaps 'therefore'), and we teach these together through LCWC/SOS (Look, Cover, Write, Check / Simultaneous Oral Spelling) (Kirk 1983). This focuses consciousness onto the fact that a common pattern exists (the 'aitch-ee-are-ee' pattern) and that these common words contain it, and also onto applying the LCWC/SOS method itself. Consciousness is focussed, in other words, on *genuine orthographic meaning and a meaningful social behaviour*. The spelling of the word '*they're*' can be learned on an occasion when the apostrophe indicating a missing letter or letters is taught - in which instance the apostrophe has a *real linguistic meaning* and the LCWC/SOS method can again be deployed as a meaningful behaviour to learn a small list of words which use this particular apostrophe. ('*Their*' is a regrettable one-off (who needs to spell 'heir'?) but you can't win them all.)

Under such targeted learning regimes the 'data' - in this case the actual spellings - will be painlessly and discreetly absorbed and filed into the unconscious, where they belong, by the unconscious, whose work this really is, while consciousness is elsewhere - out in the bigger picture among authentic concepts and genuine meanings.

Perhaps it boils down to a few pedagogical suggestions arising from a maxim: 'Always direct consciousness at meaning'. Data is usually not meaningful. In such a case, do not overtly teach it. Rules apparently governing conventions, and 'explanations' of these conventions, are usually especially virulently meaningless. Meaninglessness makes the conscious very uneasy. Consciousness enjoys, and is apparently expert at understanding, meaning. The unconscious is used to meaningless 'facts', it is much better at assimilating and managing detail and the filing of data. Wherever possible present concepts and frameworks (meaning) for learning; the 'data' to be learned is presented within the frame but unobtrusively, implicitly so.

A conclusion, of sorts.

It is worth quoting extensively, here, from the intimidatingly titled 'Effective teachers of literacy' (Medwell *et al* 1998), but looking through our new lens. They say that:

'Technical aspects of literacy ... tended to be approached in quite different ways by the effective teachers ...' (p. 77) and 'The key difference in approach was in the effective teachers' emphasis on embedding attention to word and sentence level aspects of reading and writing within whole text activities which were both meaningful and explained to pupils.' (p. 77) and '... skills were developed ... with a clear eye to ... awareness of their importance and function.' (p. 77) and '... teaching of language features was contextualised ... and the children understood the purpose of this teaching.' (p. 78) and 'Language features were taught and explained ... as a means of managing shared text rather than as a set of rules or definitions to be learnt for their own sakes.' (p. 78) and [effective teachers] '... foregrounded the creation and recreation of meaning ... they tried, wherever possible, to embed their teaching of the crucial technical features of literacy (how to do it) in a context where the children could see why they were learning about such features.' (p. 80)

Finally, the authors say that their 'most significant finding' was precisely that 'effective teachers of literacy' used this 'functionalist approach'. (p. 85) I think these paragons are, possibly without knowing it, focussing their students' conscious attention on meaning wherever possible. The mind of the child, after all, seems to have very little problem with data. If pattern and purpose are understood, then mere facts seem to slot in almost unnoticed - without difficulty, fear or pain. Effective teachers make the meta-cognition and meta-linguistics clear, directing consciousness at the point, pleasure and fabric of literacy. The rest, all the dull, incomprehensible and intimidating minutiae, they allow to flow naturally, effortlessly and very largely unconsciously, into the limpid competence of unconsciousness. They will be absolutely safe in there.

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