Critical Thinking about Weird Things

Teaching “Skepticism, Science and the Paranormal” at University

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Critical thinking does not transfer easily from one area of thought to another. One teacher decided to approach critical thinking in a particular context – paranormal claims. The effect upon thinking is often devastating.

Critical thinking is almost universally regarded as a good thing. Universities list it as a key requirement for their graduates, and employers and educators are agreed that imparting and improving this ability are imperative.

Once you become involved in critical thinking, however, a couple of large problems rapidly surface. The first is simply that authorities do not agree what critical thinking is. In his book *Critical Thinking: How to Prepare Students for a Rapidly Changing World* (1995), Richard Paul, for instance, regards critical thinking as thinking about thinking for the purpose of improving the thought process, while Diane Halpern (*Thought and Knowledge: An Introduction to Critical Thinking*, 1996) regards it as “... the use of cognitive skills or strategies that increase the probability of a desirable outcome”. Rick Rudd (2007) surveys a good many such definitions in his paper “Defining critical thinking” (*Techniques*, 2007) before concluding that the literature “... leaves one groping for a clear definition of critical thinking”.

An equally vexing problem is that there does not seem to be a generic ability called “critical thinking” that can be transferred from one discipline to another. An ability to ask probing questions in, say, politics does not equate to a similar ability in chemistry, nor in literature. As education authority David Perkins (“Teaching for Transfer”, *Educational Leadership*, 1988) says: “The most discouraging explanation is that knowledge and skill may be too ‘local’ to allow for many of the expectations and aspirations that educators have held”. Perkins makes some sensible suggestions about making thinking skills transferrable, but stresses that it is not easy, and certainly cannot be taken for granted.

Given these problems, what’s a well-meaning academic supposed to do? I took perhaps the simplest route. I selected some critical thinking skills that struck me as crucially important, and applied them to an important area. Then I built a course around it. The area was the paranormal, and the thinking skills were those known as “skeptical”.

The paranormal involves claims made about phenomena such as telepathy, faith healing, ghosts and UFOs. Why would I focus on such a weird, out-of-the-way area as this? One reason was simply that huge numbers of people believe
in the paranormal. Polls such as that by the Reader's Digest in 2004 show that about 80% of the Australian population has one or more paranormal beliefs.

I polled my own students, and found that about 60% had at least one such belief. One student believed in 12 paranormal phenomena — because they prefer an unproven or worthless alternative — then the consequences can be disastrous. If parents withhold vital medical treatment for sick children — because they prefer an unproven or worthless alternative — then the consequences can be terrible. So can making important, life-changing decisions on the basis of horoscopes or fake psychics.

Paranormal beliefs are not necessarily wrong, but research shows that many of them are not held because of good evidence. They are held uncritically, and sometimes the consequences can be disastrous. If parents withhold vital medical treatment for sick children — because they prefer an unproven or worthless alternative — then the consequences can be terrible. So can making important, life-changing decisions on the basis of horoscopes or fake psychics.

There was a further reason. I teach in the area of Science, Technology and Society in a science school at Griffith University. Almost all of the other academics are scientists, and there is a substantial contingent of chemists. Numbers in many courses were falling, and I felt a need to see if the trend could be reversed. What about a new, exciting course?

So, way back in 2001, I made a tentative decision to see if my university would let me offer a course in skepticism and the paranormal. I knew a fair bit about the Australian Skeptics — they exist to investigate paranormal claims — and I wanted to encourage students to evaluate the evidence for themselves.

I made a key decision early on. The course would be about skepticism and the paranormal, but I wouldn't try to change anyone’s beliefs. I would insist that students must understand and apply key skeptical principles, but what they made of the paranormal was their own business. I have never regretted this decision.

What sort of skeptical principles was I talking about? Three obvious ones came to mind.

There was the burden of proof: if someone makes a wild, weird claim, the onus is on them to prove it, not on you to disprove it.

Then there was Ockham’s razor: where there are two or more explanations, the simpler one is to be preferred.

Finally, there was Sagan’s balance: when you have an astonishing claim, the evidence has got to be strong enough to justify the claim.

I didn’t originate these ideas, but do discuss them at length in my book Beyond Belief: Skepticism, Science and the Paranormal, 2009.

I applied to teach the course at Griffith University in 2002. To my amazement, the proposal sailed through all the committees without any problems. Now I had a course to teach.

How was I going to do it? Some of the course content was pretty obvious. I would explain the skeptical principles, and illustrate them in action. I would also have a section on science, and how it worked. Scientific criticism can be pretty brutal, and it was important to understand just how scientific thinking worked. Then I broadened the course out at the end, and talked about the role of evidence in areas like medicine. Because science ended up playing such an important part, the course was titled “Skepticism, Science and the Paranormal”. Its first appearance was in 2003.

There were jokes among the staff about what I could find when I first stepped into the lecture theatre. Would there be row upon row of little green men, staring at me from their huge dark eyes? Would the students look normal, but have their notepads floating in the air in front of them? Would the Loch Ness Monster be stretched out along the back row of seats?

In fact, it was nothing like that. I found myself facing completely normal classes of students, with two exceptions. One is the size of the classes. In other courses in my area, the average enrolment is 15–20. This course averages 50–60. Students come from all over the university to do it. In addition, the liveliness and interest are overwhelming. Often, I make a few statements and then find myself looking at a forest of waving arms as people try to ask questions or state opinions. After lectures I am pinned at the front of the class because people want to discuss matters further.

The course has now been running for 9 years. It has won me several teaching awards. I often receive feedback from students. One mature student commented: “I'm having to rethink 40 years of belief”. Another wrote, anonymously (in block letters): “Martin, you destroyed my fantasy world!”

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On the other hand, there are problems. A Federal Minister of Education, Brendon Nelson, denounced my course, claiming (falsely): "You can even do a degree in the paranormal". A Gold Coast woman took legal action against me, claiming that I was using groups of students to take control of her mind, and also pelt her with eggs. A magistrate threw out the claims, and she received help in a hospital.

More worrying, my course has ghosts. I am not talking about the supernatural variety. I am talking about ghost students who enrol in the course and then don't participate. As far as I can tell, they think that because they have been interested in ghosts or UFOs since the age of six, they know enough to guarantee passing the course. Their horror, and sometimes rage, when they learn the truth is quite distressing. I do give warnings in lectures, and send emails, but the ghosts won't be exorcised.

Among good students, a kind of shock sometimes sets in. They work to understand the principles and apply them, and then find that they are looking at the world with quite different eyes. The beliefs of friends, relatives and parents come in for close scrutiny, and they find themselves wondering: "What can I believe in?"

One young woman gave an excellent seminar on UFO abductions. She analysed the evidence for one case, and concluded that the evidence was not strong enough to accept the claim. Then, in discussion, she revealed that her aunt was an abductee, and had an entire room devoted to the phenomenon. I call this experience "skeptical shock". It can be liberating, and it can be distressing.

What does all this mean for critical thinking? In my view, a few points are crucial. If you want to impart or foster critical thinking, you must decide exactly what you mean by it and what areas of knowledge you want it to apply to. Then, engage people's interest and foster active attempts to apply the ideas.

It is hard work, and it isn't easy, but the results can be very worthwhile.

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A Medical Myth: Drinking Eight Glasses of Water a Day

We have all heard the popular advice that we should drink at least eight glasses of water per day, so it may be a surprise that this is more myth than fact.

Of course our bodies need water; otherwise we would die from dehydration. But the amount needed is extremely variable and depends on a person's body size, physical activity levels, climate, and what types of food they are eating.

Water makes up about 60% of an adult's body weight and is an essential nutrient, more important to life than any other.

Water helps regulate body temperature, carries nutrients and waste products throughout the body, is involved in blood transport, and allows many metabolic reactions to occur. It also acts as a lubricant and cushion around joints, and forms the amniotic sac surrounding a foetus.

It is widely believed that the "eight glasses" myth was a US Recommended Dietary Allowance dating back to 1945. The guide said that a suitable allowance of water for adults was 2.5 litres per day, but most of this water could be found in prepared foods.

If that last, crucial part is ignored, the statement could be interpreted as clear instructions to drink eight glasses of water per day.

Even a comprehensive search of the scientific literature finds no evidence to support the "eight glasses per day" advice.

The clear reason that evidence for such prescriptive advice doesn't exist is that a person can get all the water they need without consuming a single glass. Drinks like soft drink, fruit juice, milk, tea and coffee, and foods like fruit, yoghurt, soups, and stews all have appreciable amounts of water that contribute to fluid intake.

Australian dietary recommendations also bust the eight-glass myth as the official Nutrient Reference Values state "there is no single level of water intake that would ensure adequate hydration and optimal health for the apparently healthy people in the population".

Don't be concerned about seeing coffee listed as a fluid - the "coffee makes you dehydrated" mantra is another myth that needs to be busted. Drinks such as coffee, tea and cola do have a mild diuretic effect due to caffeine but the water loss caused by this is far less than the amount of fluid consumed in the drink in the first place.

It's only alcoholic drinks that have a dehydrating effect.

So how do you know if you are drinking enough water? Well, you can check this for yourself every few hours. If your urine is lightly coloured or clear then you're drinking enough. If it's dark then you should drink more.

How simple is that?

Source: Associate Professor Tim Crowe, Professor of Nutrition, Deakin University; The Conversation <http://theconversation.edu.au>