

Credible endeavour or pseudoscience?

David Colquhoun and Brian Isbell

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To award a bachelor of science degree for an alternative medicine course is a failing in quality assurance, argues David Colquhoun, but Brian Isbell believes that such study helps develop valid science skills.

David Colquhoun

The vice-chancellor of Poppleton University is pleased to announce that the university's finances have been transformed since the conversion of its old-fashioned department of physics and astronomy into the new department of alternative physics and astrology. Quality is ensured by the course validation and top Quality Assurance Agency rating, both awarded by a distinguished panel of academics with appropriate expertise in astrology. (Apologies to Laurie Taylor.)

There are not many institutions where people are free to seek truth as best they can and able to speak freely. Universities came to embody these characteristics as religious influence declined in the 19th century. Under the influence of Wilhelm von Humboldt in Germany and Jeremy Bentham's followers in the UK the modern university was born. The intellectual freedom they enjoy has always been regarded with suspicion by politicians, and that is one reason why it is essential to preserve it.

Now the threat to universities is no longer religion but bureaucratisation and corporatisation. In *A Sceptic's Medical Dictionary*, Michael O'Donnell defines education as "Elitist activity. Cost-ineffective. Unpopular with Grey Suits. Now largely replaced by Training". One illustration of the extent to which training has replaced intellectual activity is the proliferation of degrees in alternative medicine. These subjects are not science, because they are not based on empirical observation. There has been much argument about whether subjects such as hospitality management should be eligible for bachelor of science degrees, but they are at least what they say on their label. Much of alternative medicine is positively anti-science, yet honours BSc degrees are being awarded in that area by 16 UK universities. Even Peter Fisher, clinical director of the Royal London Homeopathic Hospital, has admitted that much more work needs to be done to establish a scientific basis for homoeopathy.

What do I mean by anti-science? Try this. "The philosophical work of Deleuze and Guattari proves to be useful in showing how health sciences are colonised (territorialised) by an all-encompassing scientific research paradigm - that of post-positivism - but also and foremost in

showing the process by which a dominant ideology comes to exclude alternative forms of knowledge, therefore acting as a fascist structure." I know that that sounds like Alan Sokal's famous spoof, but I fear it was serious. The paper, written by four academics from the department of English at Ryerson University and the faculty of health sciences at Ottawa University, in Canada, was published last year in the *International Journal of Evidence-Based Health*.

Why, one might ask, have none of the regulators that beset universities noticed that honours BSc degrees are being awarded in subjects that are pseudoscience? We have approval and validation of courses, external examiners and the QAA. The answer appears to be that none of these mechanisms works. Courses in astrology are validated by committees of eminent astrologers. Westminster University's BSc is, they say, a "fully validated degree that satisfies internal and external quality assurance standards". But it has refused repeated requests to reveal who does the validation.

Salford University's external examiner is from Westminster, and the University of Central Lancashire's BSc in homoeopathy has an external examiner from Salford. There is something circular about the system.

The QAA is equally toothless. We would not want a government organisation telling universities what they should and should not teach. But that means that the "quality assessments" take little account of what is taught. Minor details such as whether the course content is pseudoscientific gobbledegook cannot, according to its own rules, be taken into account. Courses are judged only against the aims set by their organisers, so if the declared aim is to teach pseudoscience they get full marks if they teach pseudoscience efficiently.

Appropriate boards of assessors, sympathetic to pseudoscience, ensure that no problems arise. But the QAA was set up to make universities accountable for the large amounts of taxpayers' money they receive. The QAA's rules have prevented it from fulfilling that aim.

Clearly the buck stops with university vice-chancellors who award the degrees. Two weeks ago, after the publication of my opinion article and a special report on university homoeopathy courses in the journal *Nature*, the BBC tried to get one of the vice-chancellors to defend themselves. They did not succeed. Letters to vice-chancellors on this go unanswered. Requests to see course materials have repeatedly been refused. The QAA is exempt from the Freedom of Information Act. Teaching materials and the names of examiners are kept secret. This I find incomprehensible and indefensible.

If a few vice-chancellors appear to value bums on seats more than honest science they should justify their views in public.

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Brian Isbell

You may have noticed the recent flurry of criticisms slating the award of bachelor of science degrees to complementary therapists. How, they ask, can we teach subjects ostensibly outside current scientific paradigms and still confer the title BSc? This question was at the forefront of the minds of the original team, a number of whom had taught biomedical sciences in universities, 12 years ago when Westminster University's health sciences degree courses were being developed. Creating healthcare professionals able to work alongside existing medical services is at the core of what we have always done in the School of Integrated Health.

A comment from a group of homoeopathy health sciences graduates at their Westminster graduation ceremony illustrates the point. "We didn't fully appreciate the value of all the health sciences on our course until we started our own practices working with local GPs," they said. "Being so conversant with health sciences meant that we could communicate well with GPs." Complementary therapists don't carry a generic title that states a level of knowledge and competency - indeed they couldn't because the training is not generic. But graduates of BSc (hons) degree courses have a firm grasp of scientific knowledge and biomedical skills that, with their high level of education in individual therapeutic disciplines, assures patients that they are in safe and competent hands. The shared philosophy across Westminster's range of complementary therapy degrees is that students need a compulsory core of health sciences. This includes anatomy, physiology, biochemistry, pathology and differential diagnosis.

Phytochemistry and pharmacology are included for degrees in herbal medicine and nutritional therapy. This need for a strong foundation in biomedical sciences in complementary therapy courses featured among the recommendations in the House of Lords Science and Technology Subcommittee report of 2000.

Complementary therapists must be conversant with the biomedical model of health and disease so that they can identify situations requiring referral to other healthcare practitioners. In a professional setting, to practise safely it is vital to know your limitations. When receiving referrals from or referring to GPs or other healthcare workers, complementary therapists must be able to communicate in terms all parties understand. Patients often research their symptoms or diagnosis and expect an informed response. To consolidate students' scientific knowledge and understanding, the application of biomedical sciences to case history-taking and diagnosis is reinforced throughout their clinical work.

A second core component of the complementary therapy courses at Westminster is the development of research skills, from learning to discriminate between research sources to understanding the quantitative and qualitative methods used in scientific and healthcare studies. During the final year, developing students' ability to critique biomedical research papers and sources from their own discipline solidifies this research-mindedness.

Undergraduates are expected to discuss strengths and weaknesses in the design, methodology, results, discussion and conclusions of these publications. Some of those papers include unwarranted positive conclusions about their therapy or have design, data collection or

manipulation errors.

This ensures students' research awareness is assessed and, more importantly, that they are encouraged to be non-judgmentally critical of unsound and unscientific research. With these skills they are able to look without bias at scientific models that may help explain mechanisms of action of their therapeutic work.

A third scientific theme in most complementary therapy courses in the UK addresses the psychological dimension of patient-practitioner interactions to ensure that students are conversant with the complexity of the biopsychosocial and psychoneuroimmunological models of health and disease.

Research-mindedness, consideration of psychological models and the application of biomedicine are embedded throughout Westminster's complementary therapy courses and are constantly developed as students apply them in the clinical setting. With such a clear emphasis on scientific models and critical thinking these skills are increasingly being used in practice. The courses are challenging, and at times students have to work with conflicting scientific models that may not always fit with their clinical practice. One such conflict arises in homoeopathy as, although there is scientific evidence for its efficacy, current theory cannot explain how the intervention works.

Nonetheless, the development of scientific skills and the ability to critique practice are essential preparation for complementary therapists.

Graduates will therefore be capable of furthering the research in their discipline and be fit for working in the emerging integrated healthcare system of the 21st century. With such a strong emphasis on scientific models it is entirely fitting that complementary therapy degrees in the UK should be bachelor of science.

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