For anyone working in a university, this year has been very stressful. The 'quality' of a university is measured using a number of 'performance indicators', not least by the Research Assessment Exercise, or RAE. Universities are subject to numerous and various league tables using many different ways of calculating the quality of teaching, research, facilities, etc. Being entered into the RAE, or not, can make or break an academic career. A bad RAE outcome for a department can result in a significant loss of funding. The output measure for the RAE is mainly in the form of research papers published in research journals and is also a measure of the worth of your work. Does this output make a difference to teachers and to the experiences of pupils? The debate rages on about the worth of education research.

Here is not the place in which to extend that debate but, as an educationalist who has to conduct 'research', I am always torn between doing something that makes a difference in the classroom and producing something that is of 'academic worth'. Can I really combine both? High quality research may not have much impact on the professional community from which I originated – a classroom science teacher trying to make a difference to the lives of my pupils. If it does, it could be many years down the line that my research will have an impact, if at all.

As a textbook writer, the product – textbooks used by many thousands of children daily and read and adapted by teachers – counts for nothing in academic circles. I may have to read, intellectually digest, rephrase, simplify, link theory to practice, be innovative, novel, even creative in the text and resources that I produce but, from an academic perspective, this is worthless. During the years of working in initial teacher education I have formulated a 'law' of research – not a scientific law, just a common-or-garden one, which I have called 'Williams' Academic Worth Law': 'The academic worth of an education writer’s output is inversely proportional to its readership'. As a scientist, I will now show some evidence to back up my 'Law'.

As an education writer and broadcaster I contribute to many publications. I have written for newspapers, magazines and professional publications. I have written textbooks, a management book and have published articles in, for example, the School Science Review. I have given keynote speeches and contributed to national and international conferences. I have acted as a 'researcher' consultant and contributor to TV and radio programmes as diverse as a series on evolution for BBC Wales to 'sound bites' on the news to becoming a stereotypical 1950s Deputy Head for a Channel 4 reality series.

"Now put your hands up if you have read the TES and scanned it for the tips and articles that relate to science education or enjoyed the latest edition of SSR with its articles and notes. Excellent – a very good show of hands!"

This constitutes a wide range of education writing and research. But how is this viewed and, more to the point, what is the 'worth' of what I do? I know that my education writing has had an impact. I have seen children using my texts and worksheets. I know people who have listened to me on the TV and radio – indeed, I have been contacted by people who agree and disagree with what I have said. I have received criticism from teachers about my writing – some justified, some a matter of taste or style. The readership of newspapers is counted in the hundreds of thousands and viewer figures for the Channel 4 series went into the millions.

As an academic, only a very limited amount of what I have described counts as 'worthy' of academic recognition. In the main, what matters are 'papers' in academic journals, the sort one has to read if writing assignments as a trainee or a student, or a dissertation for a higher degree. Giving 'papers' at national and international conferences is
also of worth; that is, if one is at the ‘right type’ of conference, attended by noted academics in the field. The academic conferences often attract delegates in the hundreds – mainly like-minded academics from other institutions. Sometimes, ‘presenting a paper’ is carried out in a small room containing fewer than twenty people.

If I am asked of what I am most proud, it is the materials that I researched for my textbooks. As one of three authors of a major published science series, I know the volume of research we all carried out to allow us to create context-led texts that explained difficult concepts and ideas in ways that children would understand and, hopefully, be engaged by. It was no less taxing than reading the latest academic paper on multiple intelligences and the evidence for and against.

Observing a trainee, talking to pupils using the texts, or seeing others being curious about something I have written, gives me far more pleasure than my academic paper being ‘cited’ in another paper. Witnessing a context that I used to explain artificial selection – the reintroduction of the extinct quagga into the wild in Africa – being used in a Key Stage 3 (age 11-14) test was also pleasing. This, however, is classified as ‘professional’ not ‘academic’ output. In fact, even articles published in the School Science Review are not, as I was once reminded by an education researcher, strictly speaking ‘academic’, instead being viewed as ‘professional’ output.

From home or work I can access, via my University electronic library, 604 full-text education journals; read and download any articles of interest and, if I have time, also access hundreds, if not thousands, of journals and articles across all the sciences as well as education. This is an excellent resource, but teachers in schools will struggle to regularly access such a wide spectrum of journals unless they are enrolled as students on a higher degree course. Even if they could access them, would they have the time to read them?

I would like a show of hands now – how many readers have looked at any recent articles in the International Journal of Science Education? Now, put your hand down if you are studying for a higher degree or diploma in science education. Anyone left? Probably not. So, what are you missing? An article on students’ mental models of acids and bases, another on gender in chemistry classes and one on science-focused school trips: integrating theory and practice. While these papers are undoubtedly worthy, well-written and actually do contain useful information, the readership amongst day-to-day science teachers will be very limited.

Now put your hands up if you have read the TES and scanned it for the tips and articles that relate to science education or enjoyed the latest edition of SSR with its articles and notes. Excellent – a very good show of hands! Many of you will take ideas from these professional publications and try out new approaches in the classroom.

If I publish in an ‘academic’ journal, my academic worth goes up – even though the readership is quite small. If I write for the TES, SSR or even EiS, the academic worth is next to nothing (though SSR is now recognised on a low level for the current RAE), even though the impact of writing for the professional publications is much greater and much more immediate.

Of course, canny readers will have already sussed the answer to the dilemma – publish in both! That is indeed what those of us working in the teacher education field strive to do. Hopefully, we can adapt those academic articles for re-publication in the professional domains.

Education research is important and someone has to write the articles to be published in the academic journals. We could question why this has to be the only ‘worthy’ mode of transmission of important findings, given that the audience we need to reach does not actually read the journals on a day-to-day basis. Eventually the best research will find its way into the classroom – usually after a number of years. However, I would argue that more ‘worth’ should be given to the professional work that educators do. There should be more recognition of the real ‘research’ that goes into producing high quality teaching materials and the theoretical underpinning of the approaches used – the linking of theory and practice.

“If we had such a journal, then it should have its ‘worth’ rating increased for schemes like the RAE. What would it be called? How about School Science Review – now there is a catchy title!”

Perhaps there should be more hybrid publications that not only provide high quality academic papers but which also have well-written professional articles designed more for impact than academic excellence. If we had such a journal, then it should have its ‘worth’ rating increased for schemes like the RAE. What would it be called? How about School Science Review – now there is a catchy title!

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He is currently researching creationism and evolution in school science and the nature of scientific understanding in trainees. In the evenings and at weekends he writes for professional publications, hoping that one day their ‘worth’ will increase and he can justify using the working day to free up some evenings for his hobby, which is writing.

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