

***Journal of Biological Education* – a personal reflection on its first 50 years**

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My association with the *JBE* dates back to 1984 when, a year into my school teaching career, it published an article (Reiss 1984) I sent to them that I had started thinking about while doing my teaching practice at Netherhall School in Cambridge the year before. Before training to teach in schools I had done a PhD and post-doc in evolutionary biology and population genetics and so had got into the habit of trying to publish. Once I got my first teaching job, at Hills Road VIth Form College in Cambridge, I therefore rapidly transferred my allegiance from academic biology to science education in general and biology education in particular.

At that time John Barker was the editor of *JBE*. I have never asked him but I suspect he was somewhat bemused at the barrage of submissions he started to receive from a certain Dr Michael J Reiss (my publications list shows me that I had eight papers published in the journal during my five years of school teaching). I can still well remember the surprise and honour I felt when, towards the end of these five years, I opened a letter from John inviting me to join the editorial board. This led to me spending a total of 21 years on the editorial board (1988-93; 1999-2015), serving under four of the journal's editors.

The first of these four editors was John himself – who was editor for an amazing 24 years (Turner 1998). I was honoured to speak at John's *JBE* retirement party – memorable in part for the excellent wine he provided (always a feature of any event John organised). In certain respects the journal had its golden age under John's editorship. Each issue contained a range of articles, some written by practising teachers, some by academics and some by others – but all authored by people keen to improve the practice of biology education. John was succeeded in 1998 by Dave Phoenix (now Vice Chancellor of London South Bank University), and Dave in 2003 by David Slingsby, with whom I worked for many years of Salters-Nuffield Advanced Biology and who has made a major contribution to ecology education (e.g. Barker and Slingsby, 1998). In 2014 David handed over the editorial reins to Ian Kinchin, whom I first got to know for his wonderful work on tardigrades (Kinchin 1994) and for whose PhD I was the external examiner.

JBE has been very well served by its editors over the years. A problem that all of John Barker's successors have faced is the difficulty of attracting sufficient articles from practising school teachers or FE lecturers. As a result, *JBE* has morphed, in a way that *School Science Review* and *The American Biology Teacher* have not, into an academic journal. There is much to welcome in this, and being published by Routledge has led to a number of improvements, but it is a pity that the journal no longer has the diversity of authors that it did.

To my amazement, I find that I have authored 31 *JBE* pieces (excluding reviews) before this one. This includes one that I had completely forgotten about, penned for the journal's 25th

anniversary (Reiss 1991). On re-reading its title I assumed I had made a mistake but on re-reading the article I see it consists of predictions for the 25 years from 1991 to 2016, some of which seem worryingly prescient. I hope I am around to be invited to contribute a piece for the journal's 75th anniversary.

Looking ahead

So with what should biology education, and therefore *JBE*, concern itself over the next 25 years? In a number of respects, biology education is in a strong position. In many countries, biology is more popular at school level than the other sciences, leading to good undergraduate recruitment (though the law of supply and demand means that biology graduates typically earn less on graduation than their chemistry and physics counterparts). This leads to a virtuous circle in which the next generation of school biology teachers tends to be of high quality, thus enthusing their students, making such students more likely to study biology once it is no longer compulsory, and so on.

Furthermore, biology has always included or had strong links to health education. Many students find issues of health to be interesting and personally relevant. We live at a time of unprecedented developments in health and medicine. On the one hand, tremendous advances are being made in regard to such major diseases as the cancers and dementias; on the other hand, the incidence of obesity and allergies has risen alarmingly and there is a real risk that the antibiotic era may soon be severely compromised. Biology education, at school and elsewhere, has a tremendous role to play.

Nor is the contribution of biology education to issues of health merely to do with the content of health education. I set up and spent ten years editing the journal *Sex Education* and have argued repeatedly that one of the things school biology education can do is introduce students to a richer understanding of sex and gender than is usual. For example, the way we teach sex and sexuality in school science is far too oversimplified (Reiss and White 2014). For a start, not everyone is simply XX or XY. And then there is the fact that chromosomal sex doesn't exactly correspond to how people see themselves. In a typical secondary school with over a thousand students, there are likely to be half a dozen or more who don't fit neatly into the binary classification of male is XY, female is XX. And when it comes to teaching about sexuality there is, of course, far more diversity than most school biology textbooks seem comfortable admitting (Reiss 1998a).

Another area where school biology education has much to contribute is in environmental matters. One of my regrets about my time in biology education is that while the quality of school teaching about molecular and cell biology has increased considerably, due in large part to advances in our understanding of the basic science, the same cannot be said for teaching about ecology. Students can score well on external questions about food chains and ecosystems with the most rudimentary knowledge. Back in 1998 I wrote the following:

I bought recently at a church fete a second-hand edition of *The Ladybird Book of the Seashore and Seashore Life* authored by Nancy Scott. It is an excellent book, stuffed full of the best type of natural history. For example, it has an entire double page

spread on the periwinkles. This not only tells the reader how to distinguish small, rough, common and flat periwinkles, but gives a certain amount of detail about their feeding ecology and reproductive biology and provides an excellent colour drawing which indicates the intraspecific variation in colour and shape one finds in most periwinkle species. Nancy Scott's book was published in 1964. Nowadays I suspect most teachers would expect only 'A' level students and undergraduates to be tackling this level of detail.

(Reiss 1998b, p20)

More generally, school biology now has much more on ethics, something that I welcome. However, it is important that we teach ethics rigorously so that students learn to reason validly about ethical matters. Equally, it is important that we assess ethics in science in a way that rewards students who have learnt to reason validly (Reiss 2009).

Finally, let me return to the issue I raised earlier, that *JBE* has over the last twenty years found it increasingly difficult to attract articles from school teachers and college lecturers. I consider it important that this issue be addressed. The journal still has an excellent record of addressing issues of real importance to the school/college laboratory/classroom. However, there is a danger that school teachers and college lectures will become increasingly disengaged from the journal, feeling that they are being lectured to rather than worked with. I would encourage biology education academics, including myself, to seek to write more often with school teachers and college lecturers.

Given the various difficulties in getting such collaboration, not least because of the great pressures on school teachers and college lecturers in their day jobs, I am aware that this aim may seem a fanciful one. However, I am sure that its realisation will be of great benefit. Indeed, two of the *JBE* articles of which I am most proud are ones I wrote with students taking 'A' level biology (for 16-18 year-olds): Ward-Booth and Reiss (1988) and Woodhead and Reiss (1991).

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