

EDITORIAL

The Launch of *IJSE* (B): Science communication and public engagement

The provision of formal science education, within the boundaries of a pre-set curriculum for school and university students, is undergoing a substantial rethink throughout the world. Efforts are being made to adapt to new advances and priorities within science, to consider their implications for technology and its social consequences, to incorporate new ideas about how students learn, and to engage the interest of a broader range of young people. Indeed, the focus—at least at school level—is to address new aims, seeking to move beyond pre-vocational science education to the facilitation of ‘science literacy’ for all (however that may be defined). In the meantime, science and technology race ahead such that the gap between scientific and technological practice and the formal curriculum just gets wider. This gap also gets wider because history suggests that the science curriculum, as actually experienced by students within the classroom and laboratory, changes very slowly. Most significantly, perhaps 90% of any population never encounter formal science education after their early 20s at the latest. If they do learn about science and technology after that time, it is at their own volition and by other means. These issues can be addressed by paying close attention to *how* science is communicated and to what actions encourage *engagement* by the public, whether of school/university age or older.

At the moment, most science education research focuses on conventional teaching and learning in the classroom and laboratory. An increasing amount of very significant learning is as a response to the use of unconventional means of access to knowledge. We still have little idea, however, about the process of seeking such knowledge and to what effect. There is a number of reasons why this is so, including uncertainty about what is actually being done, when, and by whom. Science communication is an elusive concept. Most importantly, there is an inadequate number of specific outlets for the publication of such research, a process which is vital if knowledge of the field is to be advanced, if developments of new learning resources are to be based on evidence rather than on hunch, and if a reformed specialism of ‘science communicator’ is to be more firmly established.

There is also a very large field of what might be termed ‘science engagement’ in an active sense of interaction between scientists and specific audiences concerned with



particular science research. Whilst we are aware that there is a multitude of journals which publish such research interactions, the reports are often more concerned with research outcomes than the communication of the science. The information is often embedded around the topic rather than the process. If science communication is to be more informed, the success of these processes needs to be analysed and described and to be readily accessible to those concerned with practice.

There is also a growing field of communication of science through the arts, which needs exposition in a scholarly manner to further inform the discipline and practice of science communication. At present, therefore, outlets which seek to publish in these fields to inform practitioners about science communication and informal learning are few.

IJSE (B) will provide such an outlet. In common with *IJSE* (A), which will be concerned with learning and teaching within the formal curriculum, all the papers published will have an empirical element. That is, there will either be empirical evidence drawn from the practice of communication that justifies the drawing of theoretical conclusions, or theoretical assumptions that are borne out by the empirical evidence drawn from the practice of communication. The emphasis will be on *explanation* rather than on description or imprecise prediction.

As a consequence of these commitments, the journal will seek:

- To bridge the gap between theory and practice concerning the communication of evidence-based information about the nature, outcomes, and social consequences of science and technology.

As such, papers in the journal will find a use in the teaching of science communication. There is a growing emphasis on science communication within conventional science education courses, the provision of science communication modules in undergraduate science and engineering degrees, and the increased provision of postgraduate science communication degrees. All will need an enhanced research base if they are to be academically valid.

- To address the perspectives on communication about science and technology of individuals and groups of citizens of all ages, scientists and engineers, media persons, industrialists, policy makers, from countries throughout the world.

Science communication is not only about the relationship between scientists and individual members of the public but also between organised and *ad-hoc* social groups. Such relationships include all those who are stakeholders in the field. Hitherto, much of the reported work on science communication has focused on the developed world: a greater emphasis on the developing world should aid the process of development and should be reported. This includes improving the research base on the relationship with indigenous knowledge of science.

- To promote rational discourse about the role of communication concerning science and technology in private, social, economic, and cultural aspects of life.

In addition to the established justification of science communication in terms of the economic significance of science and technology, the journal will address

issues concerned with the impact of science on the private lives of individuals, or their social lives as members of a community, and on the cultural lives of nations.

It is anticipated that papers will address:

- The interests in, perceptions of, and behaviours regarding, communication about science and technology of all individuals. These individuals will be of all ages (from schoolchildren to senior citizens) and groups (whether formal [e.g. within organisations] or informal [i.e. 'free-choice'] or linking those categories).

Relatively little has been published so far on science communication involving adults and on the linking of formal and informal contexts for learning.

- A full range of social groups and nationalities.

Much existing work has concentrated on privileged social groups and on majority ethnic groups within societies. Work on the gendered aspects of science communication and on ethnic minorities is needed to give a fuller picture of the field.

- Forms of communication of information and opportunities for active engagement such as those presented by museums and science centres, festivals and science shows, printed media (newspapers, magazines, books, comics), film, the Internet, public policy documents, and public dialogue.

The essence of science communication involves an increasing use of the multiple sources of knowledge and increased opportunities for dialogue and engagement that are now available.

- A focus on the actions of initiators and on the reactions of recipients in the science and technology communication process, severally drawn from scientists and engineers, mediators (e.g. newspaper editors, book authors, web designers), policy-makers, and the 'public'.

Whilst direct 'scientist and public' links remain of importance, research into the various combinations of bipolar and multi-polar links is needed if a comprehensive picture of the field is to be painted.

IJSE (B) will publish:

- Substantial research papers, whether moving from empirical results towards explanatory theory or vice versa.

In this respect, the established tradition of *IJSE*, continued in *IJSE* (A), will be extended into the science communication and public engagement fields through *IJSE* (B).

- Small pieces of research, or syntheses of such small pieces of research, perhaps originating in First Degree or Master's Degree enquiries.

This will be a new departure for a refereed and SSCI-accredited journal. It recognises the high quality of much of the research work done during undergraduate dissertations and postgraduate theses. Recognising that such work is done under tight time and resource constraints, the papers published will acknowledge their scope and limitations. In addition to being worthwhile in their own rights, they may also serve as pilots for extended studies and/or indicators of fertile fields of enquiry.

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- Reviews of fields of research, the emphasis being on their applicability to practise.
Science communication research is currently reported across a wide variety of journals, for example, those concerned with school science, adult education, the learning of subjects, environmental journals, modes of science communication, and so on. This will be drawn together to generate overviews.
- Overviews of major research conferences.
There are currently few 'informal education' conferences and even fewer concerned with science communication. At best, most major conferences have a 'science communication research'-themed section. The journal will therefore welcome accounts of such sections/conferences, so that their content may be more widely known.
- Book reviews.
Few books currently appear on a 'science communication' theme. Those that do so deserve to be more widely known.

Further details of submission procedures are posted on the journal website (<http://www.tandf.co.uk/journals/title/21548455.asp>). The editors welcome enquiries and suggestions from potential authors on editor_ijse@hotmail.co.uk and sue.stocklmayer@anu.edu.au.

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