

**Postgraduate courses in Science Communication at
The Australian National University**

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Abstract

The Australian National University (ANU) has had programs in Science Communication since 1990 at The Australian National Centre for the Public Awareness of Science. The program offers undergraduate courses, three postgraduate Masters programs and a PhD program. Students who enrol in the Masters programs are, in general, science graduates who have a need for further professional development because of the demands of their workplace. The different courses within these programs have evolved and changed in response to ongoing evaluations, and to feedback from graduates. This paper describes the changes that have been introduced since their inception and the overall philosophy behind these Masters programs. The Australian National Centre for the Public Awareness of Science also offers workshops to practicing scientists which lead to an ANU Postgraduate Short Course Award. To date, over 700 scientists have completed these workshops. The structure and rationale will be briefly described.

Introduction

The genesis of the program in science communication at the Australian National University (ANU) was the establishment in 1990 of a Graduate Certificate, later a Diploma, in Science Communication. This certificate/diploma was specifically created to allow a group of graduate students to study science communication formally as part of their enrolment in an outreach program called the 'Shell Questacon Science Circus'. The establishment of a Department of Science Communication within the College of Science accompanied this initiative. Much has been written about the Circus (Bryant; 2001, Gore,

2014; Lucas, 2000; Rennie and Williams, 2000; Stocklmayer, 2002): suffice to say that the tertiary program has undergone many evaluations and iterations and is, today, a one-year Masters program supporting the flagship outreach initiative of three partners: The Australian National University; Questacon, the National Science and Technology Centre; and Shell Australia.

It was only a few years after the establishment of the Graduate Diploma that the University decided to introduce other postgraduate programs: a Masters by coursework, a Master of Philosophy (M.Phil.) and a PhD, which were all in place by 1994. The Department was very small even when, in 1996, it was designated a Centre for the Public Awareness of Science. The numbers of students were, correspondingly, also small but the philosophy of the Centre was clear from the outset. It was not to be a Centre for science education or ‘informal learning’, nor for science journalism, but would rather seek to produce graduates who were able to be employed in a range of science communication-based professions including those within Government which required science communication skills. The Centre was firm in its belief that it belonged in the College of Science, and all graduates were expected to have a science background. In practice, this meant that most had science degrees, but some had extensive experience in science journalism.

At the start, there were no examples from elsewhere on which to draw, in order to structure a program in science communication. Clearly science journalism and the media had to be part of the offerings, as did an understanding of those aspects of formal education which inform explanation and creativity in science presentation. The Graduate Diploma had a strong curriculum incorporating training in science presentation, research and evaluation, exhibit design and so on – but the basis of that experience was located in the world of science centres and outreach. What then, should constitute a Masters degree? In the first instance, help was sought from other departments. A program of 48 units was put together, of which a sub-thesis was a major part. Students had little choice at that time: two courses were immediately made compulsory and they remain so today. They are: *Communicating science with the public* and *Speaking of science*. The first of these deals with aspects of the public and science communication: what we know about straightforward informal learning such as the use of analogies, learning styles and so on;

and the ever-evolving aspects of dialogue, multicultural science and science communication research generally. The second course deals with all aspects of oral communication of science with a variety of audiences.

Apart from these two core topics, journalism and the media formed another key area of study. At that time, multimedia were the main mode of cutting-edge communication and a professional was engaged to teach the students how to construct artefacts in multimedia and, later, web pages. This course was demanding and lengthy. The remaining two courses allowed students to identify offerings elsewhere on campus which they thought might be useful but we encouraged them to do exhibit design – a decision which seems a little odd twenty years down the track but which, at the time, was a course over which we had good control. Students were also encouraged to do a placement with communicators in the media or in science centres.

Looking back, this seems a very rough and ready approach, but there was no template – and research into science communication was embryonic. ‘Public Understanding of Science’ was the dominant paradigm and we did not subscribe to that as a useful mode of communication. That meant that, in the main, we were forging our own path. Predictably, the elements of the program that were not found to be useful for subsequent employment were the intensive design aspects of the multimedia course and any aspects relating to science centre practice. Today we have the following courses in place as part of our Masters program: Communicating science with the public (6 units, compulsory); Speaking of science (6 units, compulsory); A subthesis component (18 units, optional); Science communication and the Web (6 units, optional); Science in the media (6 units, optional); Ethics, issues and consequences of science (6 units, optional); Science and public policy (6 units, optional); and Strategies in science communication (6 units, optional).

We resisted introducing some topics now being offered in other courses round the world, such as event organisation and outreach, because our students are, in the main, from Government organisations and their main role is to act as the ‘broker’ of information at the interface between their organisation and the public. This role may occur through an official appointment as a science communicator or through the nature of the work that they do. Admission to Masters programs in Australia is dependent on

previous qualifications: for a one-year program, candidates must have a postgraduate qualification such as an Honours degree. The original Graduate Diploma has now also become a one-year Masters program. This has created some tensions, in that the students have a very heavy year filled with both outreach and coursework. They are not, however, expected to complete a research component. They have a program of study which combines elements of the 'ordinary' Masters with specific fieldwork courses: thus they have less choice. Their program comprises 48 units of coursework, made up of 30 units of compulsory courses: Fieldwork (24 units) and Communicating science to the public (6 units). They also require 18 units of elective courses chosen from those above, plus Exhibition design (6 units).

Graduate destinations from the Masters programs are many and varied. As well as those who are already employed in government and science departments and organisations, some join television stations and radio networks or are employed by science magazines including *New Scientist*. They have worked in science festivals and science centres, in major international science organisations such as CERN, in universities, and in developing countries in a variety of roles.

Workshops for Scientists

Since 1996, we have offered workshops in science communication to a variety of professional scientists (Stockmayer, Gore and Bryant, 2005). These have included government departments, scientific organisations, and universities. The workshops are held over two and a half days, and earn participants an official ANU qualification – a Short Course Graduate Award in Science Communication. We find that this is considered useful for promotional and job application portfolios.

The workshops comprise three aspects: information about how to reach the public effectively, drawing heavily on current research in science communication and in informal learning; oral communication of science to the public (whosoever the participants' publics might be) with effective conference and poster communication if required; and communication through the media, which incorporates a writing component. Over the years we have had over 700 scientists take the workshops, and have noticed that their reasons for doing so are gradually changing. In the beginning, there

were two prevailing views: ‘it is important to tell people what I am doing, to get support and to educate them about science’; or ‘I have been sent here and I don’t want/need to be here’. Today, a predominantly younger group accept the need to communicate – perhaps still to gain support, but also because they really want people to relate to their research and feel positive about it. Thus the structure of the workshop has also changed, with much less time being spent on talking about why the deficit model does not work. Scientists today want to communicate and want to do it well. The effort required to communicate well sometimes surprises them – but the gains in confidence and insights, according to the evaluations from participants, are very great.

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