

USING UNIVERSITY STUDENTS AS KNOWLEDGE BROKERS FOR UNIVERSITY RESEARCH

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ABSTRACT

Many research scientists put a low priority on public communication about their scientific research because of reservations about others' interest in their work, reluctance to speak to the media or busy schedules with little time available for fitting in things that are considered 'extras'. However university staff are generally willing to spend time talking to students as that is seen as core business at the university. It is also less intimidating than being interviewed by journalists as university staff are accustomed to speaking with students. Scientists at The University of Western Australia volunteer to be interviewed by science communication students. Staff interviews form the basis for a number of assignments in units taught for undergraduate and postgraduate Science Communication degrees at UWA. This makes the assignments realistic, useful and reflective of tasks that science communicators do in the workplace. It also engages practicing scientists in the process of science communication.

INDEX TERMS

Science Communication, knowledge brokers, university outreach, training

INTRODUCTION

Many active scientists put a low priority on public communication about their scientific research. This can be due to reservations about how interesting their work is, reluctance to speak to the media, or – most frequently – busy schedules with little time available for things that are considered 'extras' (Gascoigne and Metcalfe, 1997).

The "reward" system in research institutions such as universities does not usually value general outreach; instead it focuses on traditional academic activities such as publishing in peer-reviewed journals, gaining research grants and giving conferences presentations (Jacobson et al., 2004). Staff may feel that outreach or Science Communication activities are valuable but devoting time to such activities may not progress their careers. Given this situation it is encouraging to note that many scientists do engage in Science Communication. The Wellcome Trust report (2000) which focused on the role of scientists in public debate in the UK noted among its key findings that more than half of interviewed scientists had participated in a communication effort to non-specialist audiences in the previous year. Furthermore "the vast majority of scientists believe it is their duty" (Executive summary: Wellcome Trust, 2000) to participate in Science Communication. Identified barriers that hinder engagement with Science Communication included feeling ill-equipped to discuss social and ethical implications; a perception that the media distorts science; a lack of communication training and a distinct lack of time to devote to such activities (Wellcome Trust, 2000).

It is important, however, that the community is informed of scientific achievements and advancements. Public opinion drives public policy (Brown et al., 2004) and in countries such as Canada, engagement of research institutions in knowledge transfer is an expectation (Jacobson et al., 2004). The adoption of practices within universities such as establishing information centres, hiring Science Communication specialists and revising promotion requirements may encourage greater engagement of staff with Science Communication (Jacobson et al., 2004). However for many the barriers to participation are insurmountable, particularly the lack of time.

In transferring research knowledge the messenger must be credible and the transfer of actionable messages is preferred to individual reports or isolated knowledge (Lavis et al., 2003). If researchers have the time, skills and interest to craft actionable messages that have relevance to an audience they are ideal communicators, but barriers often preclude researchers directly engaging with Science Communication. Lavis and co-workers (2003) suggest that trusted knowledge brokers or intermediaries can help overcome these barriers. University staff are generally willing to spend time talking to students, as that is seen as core business at the university. Thus using university students as knowledge brokers is a means of transferring knowledge in a credible manner. In addition, it is less intimidating for staff than being interviewed by journalists as university staff are accustomed to speaking with students.

The SPARK (Students Promoting Awareness of Research Knowledge) programme, which began at the University of Guelph in 1988 (Anon), is an example of an initiative that utilizes students as its knowledge brokers or intermediaries. SPARK provides training for students in written communication by paying them to write about research taking place at the university. The SPARKers talk to staff about their research, write stories that are published in the university's *Research Magazine* and help "enhance the understanding of research for internal and external audiences" (Research Magazine, Spring 2004).

The SPARK programme has been extended to other Canadian universities through NSERC (National Science and Engineering Research Council of Canada) funding and although there has been no empirical research on the benefits of SPARK to stakeholders (Anon A), as one university coordinator states "in addition, one researcher said that because she had to explain her work to a SPARKer who was not a specialist in her field, she had (to) simplify and clarify her ideas - a good exercise" (Anon B).

In the Science Communication programme at The University of Western Australia (UWA) we use university students as knowledge brokers. We ask staff to be interviewed about their research by Science Communication students. Staff interviews form the basis for a number of assignments in units taught as part of the undergraduate and postgraduate Science Communication degrees. We attempt to make assignments realistic, useful and reflective of tasks that Science Communicators do in the workplace. Assignments based on interviews include producing a poster display about an area of research, writing an article for the popular press, writing a media release and making a short video.

THE SCIENCE COMMUNICATION PROCESS

Using students as knowledge brokers has a number of worthwhile outcomes for all stakeholders. In general terms, this process provides information about UWA research to the press, improves communication skills of science students and in some cases staff, and facilitates communication with the public by university scientists.

More specifically, students learn to condense complex scientific information into key concepts and reassemble information into concise, understandable, jargon-free material. They also develop important generic skills such as time-management, access and management of information, team work and consultation with an expert.

“I know that much of the content of this unit will apply in everyday life, which is probably why it is interesting.” Student, 2003.

Students gain experience in the difficulty of satisfying two masters – the expert who may not have communication experience and may request inclusion of more detail than is appropriate and the unit coordinator, a professional science coordinator, who gives the mark for the assignment based on criteria for effective communication.

“Compromises had to be made and the information XXX wanted to include was far too detailed and complex for the target audience. We therefore managed to keep the display simple and engaging while including some of the information XXX wanted...” student, 2004.

To enable students to successfully interview academic staff and researchers, they participate in an active tutorial about interview techniques. During the tutorial students are given a guide about what they should aim to gain from the interview and practice interviewing each other. Students are directed to think and reflect on their interview technique including maintaining control of the interview (Whyte, 1982).

Actual interviews with staff are semi-structured in that prior to conducting the interview, students are encouraged to develop a series of open-ended questions (Britten, 1995). Aspects to be considered by students in developing their questions are: finding out the facts (who, what, when, where, why, how), how the findings or research impact the target audience, costs and benefits in dollar figures, if there is any aspect of work that could be easily misunderstood, to get and stress the correct information and if there is a need to clear the information. Students are advised to get lively quotation(s).

As well as gaining information in order to complete the particular assignment, students are required to use generic skills such as time management and organisational skills. In addition, students have the experience of interacting with the academic staff member on a different basis. Usually, staff and students are in a teacher: pupil role but in the interview situation, students need to assume a more leading role. They become aware of a side of university life that is often hidden from undergraduate students: the world of research and collegiality.

“I really enjoyed the press release assignment. I enjoyed the interview with XXX and discussed many issues about future study as well as the relevant subject. The interview gave me a better insight into how to approach lecturers. It also forced me to prepare pertinent questions that would exact good information.” Student, 2004

Following the interview, students in different units ‘translate’ information about the current research into a form accessible to the general public as: (1) a poster and (2) an article for the press (3) a media release or (4) a short video. Students work individually or in teams, depending on the particular assignment. They are constantly encouraged to focus on key messages and the target audience. Support for the actual production of the resources, for example, a poster, is given via computer-based tutorials based on the use of software such as Adobe Photoshop Elements 2.0 (Adobe Systems Incorporated).

To confirm that accuracy of information, staff are asked to read through any written material. This is not a large investment of time as staff are only reading for accuracy of scientific content as opposed to marking the assignment. If the finished products are of sufficient standard they can be sent to the appropriate section in the university for use.

EVALUATION

In 2003 and 2004, three articles written by students were published in UWA News, the fortnightly UWA newsletter that goes out to all staff ('Making light of travel' by Ibrahim Zuhree, 16 June, 2003; 'Australians murder plants worth thousands' by Lauren Arcus; and 'Sports fans score' by Geoff Rintoul; 6 September, 2004). One assignment went out as a media release ('Heart Disease, Can you Catch it?' <http://www.science.uwa.edu.au/for/media> 25 July, 2003) and was picked up by ABC radio and by Channel 10 news. Two posters prepared by students were printed by UWA academics and displayed at the UWA Open Day in August, 2004.

Students recognize that if their work is of sufficient quality, their work will be used. This adds reality to the assignments. It appears to increase student motivation and assists to achieve the desired outcomes of the Science Communication units.

Two Science Communication students were offered summer employment by UWA's Professor David Blair, the Director of the Gravity Discovery Centre (Anon C) to plan and produce a display to communicate the basis and benefits of the hydrogen economy via the Hydrogen Fuel Cell Bus project, an initiative by the Western Australian Government (Anon D). Feedback about the students' contribution has been positive with the government project officer stating 'Overall, we are very pleased with the package produced to date' (Anon E).

In 2005, links with community and metropolitan newspapers are being pursued and articles and images will be supplied to editors. Some staff are now budgeting for the printing of posters as they anticipate that the completed poster will be a worthy addition to their displays at the university open day.

DISCUSSION¹

Giving students the chance to be knowledge brokers provides them with a valuable experience. A common criticism from students is that they are not given enough opportunities throughout their science degree for 'real world' experience and the chance to apply their skills (BSc Review, 2005). In the UWA Science Communication units they are given both. Numbers in the Science Communication units continue to grow. For example, in a first semester unit, 139.208 Science Communication Writing, numbers have increased from 15 students in 2003, 31 students in 2004 to 48 students in 2005. This growth is mirrored in other units that we offer.

Student feedback indicates that students value the opportunities offered in Science Communication units. They recognize the benefits of completing assignments that enable them to learn skills and techniques that they can apply to other areas.

"The press release and article assignments I feared would not help me when adopting the information learned in this course to my honours project. Upon completion I found these assignments to be the most valuable..." Student, 2003.

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“...learning to condense scientific information and remove jargon was valuable- something that I can use in many of my other units and during my professional career.” Student, 2004.

“The fact that we were forced to focus on the target audience for each assignment forced me to think about what information should be included. I know that I have been guilty of using jargon and superfluous words to make reports sound more scientific. Removal of such wording has enabled me to write some very good reports this semester. Instead of trying to sound intelligent, I have reported the facts clearly and succinctly. My grades have improved by incorporating this technique. Thank you.” Student, 2004.

These activities have resulted in increased awareness of Science Communication at UWA as a worthwhile activity and willingness of staff to participate by being interviewed by students. A number of academic staff were initially resistant to the concept of a Science Communication programme within the university. We believe that part of the growing acceptance of the programme is academics seeing their research being communicated without a large investment of their time. While staff are not always satisfied with the ‘communication product’ the feedback has been positive.

Of the 27 staff who replied to the 2004 survey of assignment participants, all are willing to participate again. Many were pleased with the assignments produced by students.

- Re poster display: *“... we as researchers can get some feedback on what students, the general public and/or other scientists may think about the presentations... i.e. Do they work? Do they grab people’s attention?”* UWA staff, 2004.
- Re press release: *“I plan to use [it] the next time there is an opportunity.”* UWA staff, 2004.

CONCLUSION

Using students as knowledge brokers has provided students with a valuable learning experience and has also furthered the acceptance of the Science Communication programme by academic staff at UWA. Science Communication has been introduced as a discipline for both students and staff alike and there is a growing awareness of the importance of being able to communicate science to a range of audiences. Course advisers at UWA are now suggesting that Science Communication units are good options for students and three students have transferred into the degree programme as a result of taking an elective unit. These are all positive signs.

The majority of students who become involved in Science Communication at UWA take one or two units as electives. These units are not core to their degree but are units taken by choice and to complete requirements for a degree. Obviously not all students are interested in becoming professional science communicators but developing an awareness of the importance of good communication and the understanding that Science Communication is a worthy profession is an attitude to foster in science students. We believe that this is a very positive outcome for science.

“I’ve always thought that communicating science to the public is an easy task and something that anyone can do. But I have learned that it actually takes a lot of dedication and commitment...” Student, 2004.

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