An idea-packed guide for scientists teaching communication skills

Reviewed Book ROWLAND, S. AND KUCHEL, L. (EDS.) (2023). TEACHING SCIENCE STUDENTS TO COMMUNICATE: A PRACTICAL GUIDE. CHAM, SWITZERLAND: SPRINGER

Reviewed by **Andy Ridgway**

Abstract *Teaching Science Students to Communicate: A Practical Guide* is aimed at scientists who want to teach science students transferrable communication skills. It starts with a rallying cry and is filled with creative ideas for teaching sessions with top tips on how to run them effectively. Above all, this book should help scientists instil a disposition in their students that should underpin any act of communication — empathy.

Keywords Professionalism, professional development and teaching in science communication; Science communication teaching; Science education

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Teaching communication techniques to undergraduate science students often starts with a process of justifying your existence at the front of the classroom. The 'soft skill' of communication can feel alien to many science undergrads. After all, the nuances of effective communication are far removed from the likes of cell processes, quantum mechanics and organic chemistry — 'proper' science stuff.

A key requirement for selling communication as an area of endeavour and study to science students is answering the question: why does this matter to them? In attempting to answer that question, those of us who have spent their careers working as writers or presenters and find the discipline of 'sci comm' endlessly fascinating have to recognise a simple fact — it's not everyone's cup of tea.

But communication skills should matter to science students. After all, they are vital in most graduate-level careers. We know that. Yet, sat in a university classroom, students sometimes have a hard time connecting the 'woolly stuff' of communication to their imagined working lives. It's within this context that authors Susan Rowland and Louise Kuchel set out the stall for their book in its

introduction: "… in science we are not aiming to develop professional communicators. We are, however, working to provide a foundation from which students can become agile and extend." In other words, communication is a key transferrable skill for graduates, even if they aren't intending to work professionally in the field of science communication.

In a similar vein, Rowland and Kuchel are equally emphatic about how the book should *not* be used and who it is aimed at: "Importantly the book is *not* a manual to help people teach the discipline of science communication. It is focused, instead, on helping scientists teach their science students to communicate."

It's this focus on helping scientists teach communication that drives the approach to the book. The first chapters outline concepts in communication, encompassing Aristotle, audiences, misinformation and risk. But two thirds of the book is devoted to what Rowland and Kuchel describe as a: "… plug and play approach to incorporating communication in science programs." A series of short chapters provide outlines and lesson plans for different areas of communication teaching. Those new to communication teaching will find a menu of tried-and-tested interactive sessions with students. There are 'Top Tips for New Instructors' after each lesson plan, providing a friendly list of dos and don'ts borne out of experience of running these sessions.

The chapter authors, from both the science communication and science disciplines, clearly know science students and how to pitch a session accordingly. "Science students have trouble expressing opinions", starts Chapter 13, which provides a lesson plan aimed at getting students to do just that. The ideas also draw on the typical lexicon of a science class, helping students to see the connection between the 'woolly communication stuff' and the stuff of science. Chapter 32, for example, features an exercise developing students' verbal communication skills by asking them to describe shapes so someone else can draw them accurately. The examples given, a geometric mathematical sketch (the sort of thing you may remember from a maths textbook) and a molecule structure, look like the stuff of 'proper science'. Science students will feel at home.

Overall, the book is pitched well at its intended readers — scientists. The Introduction acts as a rallying cry to them, expounding the importance communication skills in science graduates. They're also offered some words of reassurance: "Meaningful teaching of communication does not detract from learning science — it improves it."

What scientists may struggle with in some (but by no means all) chapters is that the concepts and communication skills they are being invited to impart, such as how to have a presence when presenting in person and considerations of genre in communication, will be new to some of them. Some of these concepts and skills could have been explained in more detail. Those of us from a science communication background may also wonder whether developing an effective research question and how to write a conclusion in a scientific report belong in a book predominantly focused on transferable, often public, communication skills. But then, this book is not aimed at science communication academics and such things do fall within the scope of presenting research clearly.

Then there's the tendency of some chapter authors to refer to a lay, or general, audience when within science communication teaching we try to encourage students to take a more granular approach to the 'general public', recognising different relationships (or no relationship in some instances) with science different individuals have. But this point is addressed well in Chapter 3 by Nancy Longnecker: "There is no universal 'audience', in the same way that there is no single 'general public'." Hopefully it's a point that won't be lost by this book's readers.

A good way to sum up one of this book's key contributions is by asking a question. What's the first thing that springs into your mind when you read the word 'medium'? Something you grow microorganisms in? A clothes size? Or someone who can summon the spirit world? It's one of the examples Jessica Fletcher, author of Chapter 33, provides to illustrate the different meanings different people associate with words we often use in science. At its heart, the simple but effective word association game she describes encourages science students to see something familiar from someone else's perspective. To flip their viewpoint and consider someone else's view of the world. This book is chock full of ideas that will encourage students to do just that and surely there's no more important transferrable skill for our science graduates to have, whatever their chosen career.

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