Presentation Skills for Scientists

A Practical Guide

Second edition

It is now widely recognised that professional presentation skills are an indispensable cornerstone of a successful scientific career. This updated second edition provides a concise and accessible guide to preparing and delivering scientific presentations. Its highly practical 'how-to' style focuses on the issues that are of immediate concern to the busy scientist. The text covers all of the important aspects of scientific presentations, including knowing your audience, producing visual material, controlling nerves and handling questions. It also includes advice on presenting in English for non-native speakers, helping them to improve the clarity and effectiveness of their presentations. Links are included throughout the text to the accompanying website, which contains annotated video clips of speakers delivering a talk and demonstrates the common problems encountered, as well as exercises designed to overcome them. It also contains image files to demonstrate the design issues to consider when creating visual material.

Edward Zanders has spent a career in biomedical research in academia and industry and has many years of experience in delivering and attending scientific presentations in the UK and abroad. Along with Lindsay MacLeod, he provides courses in scientific presentation skills for clients of his company PharmaGuide Ltd, including the UK Medical Research Council, the John Innes Institute and biotechnology organisations based in Oxford and Cambridge.

Lindsay MacLeod taught English in secondary schools before becoming a London Blue Badge guide, the industry's recognised symbol of professionalism. She qualified as Guide of the Year. Lindsay has guided for many decades and been a specialist guide in The British Museum, The Houses of Parliament and Spencer House. She has been involved in both guide training and examining.

Presentation Skills for Scientists

A Practical Guide

Second edition

Edward Zanders
PharmaGuide Ltd

Lindsay MacLeod

CAMBRIDGE UNIVERSITY PRESS

CAMBRIDGE
UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom

One Liberty Plaza, 20th Floor, New York, NY 10006, USA

477 Williamstown Road, Port Melbourne, VIC 3207, Australia

314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre,
New Delhi – 110025, India

79 Anson Road, #06–04/06, Singapore 079906

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning, and research at the highest international levels of excellence.

www.cambridge.org
Information on this title: www.cambridge.org/9781108469425
DOI: 10.1017/9781108567640

First published 2010
Second edition 2018

Printed and bound in Great Britain by Clays Ltd, Elcograf S.p.A.

A catalogue record for this publication is available from the British Library.

Library of Congress Cataloging-in-Publication Data
Names: Zanders, Edward D., author. | MacLeod, Lindsay, author.
Title: Presentation skills for scientists : a practical guide / Edward Zanders (PharmaGuide Ltd.), Lindsay MacLeod.
Description: Second edition. | Cambridge : Cambridge University Press, 2018. | Includes bibliographical references and index.
Identifiers: LCCN 2018018105 | ISBN 9781108469425 (alk. paper)
Subjects: LCSH: Communication in science. | Public speaking. | Science – Vocational guidance.
Classification: LCC Q223 .Z36 2018 | DDC 808.06/65–dc23
LC record available at https://lccn.loc.gov/2018018105

ISBN 978-1-108-46942-5 Paperback

Additional resources for this publication at www.cambridge.org/PSS.

Contents

Acknowledgements *page* vi
Preface vii
Introduction ix
The presentation flowchart xii

1 Audience 1
2 Planning the talk 7
3 Selection and assembly of visual material 16
4 Controlling nerves 31
5 Voice 40
6 Delivery 48
7 Science and the English language 58
8 Handling questions 67
9 How did it go? 73

Conference checklist 76
Further reading 77
Index 78

Acknowledgements

Thanks are due to Sian Deciantis and her colleagues at Nexus TV in Cambridge UK for filming and editing the DVD-ROM material. We also thank the three presenters David Evans, Adrian Kastrati and Jennifer MacLeod for their cheerful willingness to devote time to the project and to deal with unfamiliar technical material.

We acknowledge cartoonbank.com for the use of the New Yorker Cartoons in the book.

The Y chromosome figure for the slide theme example is reproduced by kind permission of Nature Publications.

Professor Jane Gitschier (University of California San Francisco) inspired the idea of creating an example talk around a fictitious gene on the Y chromosome, the OOPS gene.

We also thank Katrina Halliday at Cambridge University Press for her help and encouragement in preparing this new edition.

Finally, we thank our families for their support and encouragement.

Preface

If surveys are to be believed, for most people formal public speaking is worse than bereavement, literally a fate worse than death. Pity then the practising scientists who must plan and execute complex experiments, interpret the results, write them up for publication, and then talk about them and answer questions in front of their peers. There is no choice in the matter, so they must be able to plan a presentation, design their own visual material, speak clearly and confidently, and be in control. Some people enjoy this challenge and have an instinctive ability to communicate information to audiences. Others find this particularly daunting and let themselves down through nervousness, poor voice control or by producing confusing slides that fail to convey a clear message. Most scientists know if they belong to the second group of people and most do want to improve their performance. This improvement can be achieved by every speaker, regardless of personality, but requires practice and attention to detail. The result will be a more confident speaker who can convey enthusiasm and authority without necessarily having an extrovert personality.

This book and associated online content is designed as a practical guide to scientific presentation that busy scientists can refer to without having to absorb copious amounts of theory and background to verbal communication. It is based on a course that we have delivered to technicians, PhD students, postdoctoral fellows and business development managers in Cambridge and elsewhere in the UK. Apart from receiving instruction in preparing and delivering scientific talks, each delegate is filmed delivering a short technical presentation and the recording is played back to them. Over the years, we have learnt a great deal about the specific problems with scientific presentation and how these problems can be addressed. We therefore decided to pass this knowledge on to others in the form of this book and the website, which contains realistic presentation scenarios and helpful exercises.

The authors have used their different professional backgrounds in a complementary way. Lindsay MacLeod covers the ‘soft skills’ required for all public speaking, drawing on her many years of experience in

training Blue Badge guides in London, and over 25 years of regular presenting. Ed Zanders covers the skills required to process and deliver scientific data to an audience over a short period of time. He brings over 30 years' experience as a practising scientist and has studied many hundreds of presentations from junior scientists up to Nobel Laureates; he has also delivered many of his own talks in the UK and abroad.

The book is presented in a compact format, enabling the speaker to carry it in a pocket or handbag, perhaps en route to a conference or seminar venue; the website can be accessed on the road or at the conference. We envisage this being particularly useful for last-minute practice of the exercises to control nerves and enhance vocal modulation.

The chapters are laid out as components of a flowchart to systematically cover the most important aspects of scientific presentation, ranging from audience awareness through to handling questions. Although the text can be referred to on its own, the material on the website provides detailed practical help in the form of slides and video clips and is a critical part of the publication. The web material includes a PowerPoint presentation on a biomedical topic to illustrate effective and poor delivery styles for native and non-native English speakers. It also includes demonstrations of exercises designed to assist in developing a clear modulated speaking style. Finally, we have included a checklist at the end of the book covering the key points that must be addressed before giving a presentation.

Introduction

Background to scientific presentation

A scientific presentation is normally a formal communication of information to an audience at a conference, seminar or laboratory meeting. The majority of talks describe the background and design of experiments to increase knowledge of a particular scientific phenomenon. Then the results of these experiments are delivered, as well as the conclusions that can be drawn from them. The conclusions drawn from these experiments and the data that support them are almost always the most important pieces of information that can be communicated to an audience of fellow scientists. Presentations are therefore a showcase for your work, or that of your institution. How well you deliver scientific information depends on several factors: these include control of nerves and voice, as well as creating visual media that convey information clearly in as short a time as possible.

As a scientist, you are often too busy to think about the deep-seated motivations that drive your work and the way that you present it to the outside world. Maybe you are too tied up with the exhilaration of making new discoveries; alternatively (and more frequently for most scientists), you suffer from the frustrations of failed experiments or having to deal with non-scientific issues such as raising money and dealing with laboratory politics. Success, when it comes, however, makes these frustrations irrelevant; the only feeling now is one of wanting to publish the results and present them at meetings. The main reward for this success is one of appreciation by one's scientific peers, be they colleagues or competitors. This is one of the main motivators of the practising scientist and must not be underestimated. It is true that other motivations exist, for example to help humanity by discovering new medicines to cure disease, but these drivers often take second place to simple curiosity and interest in solving problems. A consequence of all this is that you as a scientist are primarily interested in hard data. If you read a published paper, you want to examine the results in fine detail. If you hear a talk on a subject that is relevant to your work, you want to see the data.

Most scientists do not have the time or inclination to think about how the features that make a talk effective or irritating may be identified and used to advantage in their own presentations. It is, however, worth making the effort to identify your key behaviours that can be enhanced or reduced as appropriate. Such insight will lead to improvements in your own delivery and avoid you being lost in the crowd of speakers who deliver indifferent talks.

The main components of any verbal communication are delivery, speaker appearance and content. According to surveys, content makes by far the least impact on an audience. Can this really be the case for scientific presentations as well? After all, experimental data are the currency with which science operates. Perhaps it depends on the relationship between the speaker and audience. If a competitor is showing results from experiments that you have done, or were planning to do, then poor delivery and speaker appearance might not be so important; this is because all that matters now is the data. This is a familiar situation, particularly for the younger scientist who is under pressure to publish original experimental work. The adrenaline flows, not just in the speaker, but in the recipient who is anxious not to be scooped, or has been given exciting new ideas to explore. This is not, however, a recommendation to ignore delivery and presentation. A seminar describing a major new finding in immunology comes to mind; the data kept the audience engrossed, but also agitated, as the speaker was monotonous and boring. In fact, these last aspects remain in the memory for nearly three decades, long after the data were forgotten!

What makes a great talk?

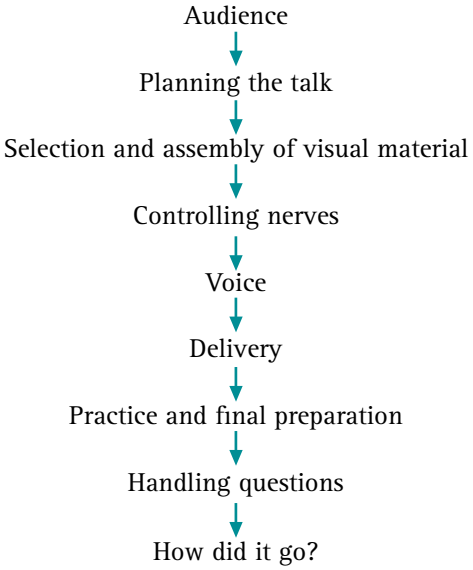
This thought-provoking question appeared on a feedback form handed in after one of our courses. At first glance, the qualities that make a scientific talk ‘great’ are hard to pin down, similar to those relating to music or painting, or other human activities. Understanding the qualities of the great orators of history is one thing, but luckily most seminars or conferences do not involve stirring speeches, otherwise their delegates would rapidly be exhausted. However, a little reflection after hearing a very good (or even great) scientific presentation is, in our view, due to very specific qualities of the speaker.

The first is **confidence**, conveying to the audience that the speaker knows what they are talking about while hiding any signs of nervousness (even if they feel it inside). Secondly, their style is often **conversational**, the very opposite of speechifying. This means that, however big the audience, each member is made to feel that the speaker is communicating to them alone. This is very much like the 'fireside chats' of US President Franklin D. Roosevelt in the 1930s and '40s in which he managed to achieve a personal touch despite addressing millions of radio listeners.

Some speakers deviate from their original material in a verbal 'aside' that almost comes over like a whispered confidence and can be very effective. Some examples of speakers that convey these qualities are available via the weblinks sheet available at www.cambridge.org/PSS.

The presentation flowchart

The following flowchart covers the key elements of a scientific presentation, most of which are the subject of an individual chapter.



If you want to deliver a successful talk you need to thoroughly review each chapter (and the online material) so you can answer the following questions:

Is the material:

- Tailored to the right audience?
- Well-constructed with a clear theme and take-home message?
- Supported with clear visual material?
- Delivered clearly without nervous distractions?

Are the questions handled professionally?

A note on using the online material

The following chapters contain background material and basic guidelines for preparation and delivery of scientific talks. Video, text and images designed to illustrate specific topics and to provide exercises for controlling nerves and enhancing delivery, as well as weblinks to further resources are available at www.cambridge.org/PSS.