EFFECTIVE SCIENCE COMMUNICATION

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Summary

Scientific data do not speak for themselves but require an argument to be accepted as facts. For facts to be trusted and results being accepted, we must communicate them effectively. Therefore, scientists are, to some extent, only as clever as others think they are. The communication of scientific results is therefore at least as important as their generation but most university degrees and PhD programmes provide no or very limited training in science communication. In this course, we learn a strategy to effectively communicate research in paper abstracts, in grant applications, through websites as well as in oral and poster presentations. Our analysis reveals strategies to structure and formulate texts. These findings contribute to a more successful communication of the participant's work and identify strategies for effective forms of writing.

Training Elements

- The role of scientific communication (SC)
- The fivefold structure of SC
- Structuring texts
- Convincing editors and reviewers
- Wording, hedging
- Examples of clarity and brevity
- Positive and active sentences
- Practical examples and further resources

What you can expect

In this course, you will learn to get your message across in scientific publications, conference posters, for grant proposals, on your web-page and through oral presentations. The technique taught in this course is simple and effective at the same time, exploiting a pattern that is commonly employed by successful communicators.

The course will help graduate and PhD students and researchers to present their work to an international audience efficiently and professionally. Using a range of examples, you will learn to analyse scientific publications for their composition, the structure of an argument, and the use of English. We will also pay attention to the specific challenges of participants that are non-native speakers of the English language.

The concept is not specific to a particular field and is well suited for researchers and students in the engineering, biomedical, biological, medical and physical sciences. The course is to provide you not only with practical advice but will also teach you a strategy to continue improving your communication skills throughout your career.

What you need to prepare

To produce a concrete outcome for the workshop, you should prepare an abstract/summary. It does not matter whether this is the abstract to a publication, project, poster or the description of a project. The text should be strictly limited to a maximum of 200 words (less than 1/2 page). The course will give you the opportunity to improve the text throughout the course. Depending on the desired overall length of the seminar, we will share, discuss and revise the text during the seminar.

Requirements

Because we will study journal publications, which we project with a data projector, the participants should sit close to the projection wall. For this reason, the number of participants should be limited to a group that can sit close enough to the projection wall and still has table.

Your Guide

I have a background in control engineering and my research focusses on understanding the cells in the human body. Technological advances have made it possible to identify and characterise molecules and cells but the mechanisms by which cells realise their function, remain poorly understood. In my work, I use mathematical modelling to help interpret experimental data. Our theoretical and computational tools support biomedical and biotechnological research.

I received my first degrees in control engineering from the University of Applied Sciences in Hamburg, Germany and the University of Portsmouth, followed by a PhD from the University of Manchester, Institute of Science & Technology (UMIST) for research on the application of possibility theory to data analysis. With an interruption of one year for an invited research fellowship at the Technical University Delft in the Netherlands, I spent almost eleven years of my academic career in England and had one of the first interdisciplinary joint appointments between a Dept. of Electrical Engineering and a Dept. of Biomolecular Sciences in the UK in 2000. Since 2005, I hold an adjunct professorship at Case Western Reserve University, Cleveland, USA, which was initiated by Mihaijlo Mesarovic, the founding father of the general systems theory. In 2005, I became a fellow of the Stellenbosch Institute for Advanced Study (STIAS) and in 2015, I was elected a member of the Foundations in Medicine and Biology review panel of the German Research Foundation (DFG). I founded the first systems biology journal and have extensive experience in reviewing grant proposals for various international funding bodies. I have also had the opportunity and experience to advise funding bodies, decision makers and institutes on strategy and development.

To this day, I have written four books, including the research monograph “Possibility Theory with Applications to Data Analysis” (Wiley), the textbooks “Data Engineering” (Wiley) and “Stochastic Approaches for Systems Biology” (Springer). Another, more unusual book is an introductory conversation handbook for 'Plattdeutsch' (lower German) an old language that is spoken by only few people. I have edited other books, including a volume on “Systems Biology” (Portland Press), the Encyclopaedia of Systems Biology (Springer), a book on MicroRNA Cancer Regulation (Springer) and in 2016 a book on Systems Medicine (Springer). I am the editor-in-chief for the upcoming Encyclopaedia of Systems Medicine (Elsevier). My interest in uncertainty arising from the complexity of multilevel and multiscale nonlinear spatio-temporal systems has also led to interactions with philosophers of science. When I am not thinking about maths, my research or the philosophy of science, I am a keen kitesurfer, DJ and enjoy the production of electronic music.

I motivate this course above, by saying that one is only as clever as others think you are (hence our effort to impress, or communicate effectively) but as you progress in your academic career, you are also only as clever as the people you work with. I have been very fortunate to work with an excellent team of scientists and group of wonderful people, whose work is presented on our webpages at www.sbi.uni-rostock.de