Effective scientific communication: journal papers, seminar or conference presentations, and posters

Heather Silyn-Roberts, BSc, PhD (Biomechanics)
Department of Mechanical Engineering
The University of Auckland
New Zealand
h.silyn-roberts@auckland.ac.nz

The aim of these courses is to introduce graduate students to the principles of scientific communication: writing a journal paper; making an effective scientific conference poster; and making a professional seminar or conference oral presentation of scientific material. The presenter is multi-disciplinary and the courses are adapted to each graduate school.

1. Writing and Publishing an Effective Journal Paper (half- or 1-day programme)

Participants should bring a journal paper that they have written or are familiar with; each participant will analyse this paper during the course.

Aim
To help participants understand the following: the characteristics of an effective paper; requirements for each section of a paper; what reviewers and editors look for; the process of publishing a paper.

To be covered
The general structure of a journal paper. Then, for each section: the purpose of the section; how to write it; difficulties in writing it; tense of the verb; common faults; review checklist.

Method of learning
- PowerPoint presentation by Heather Silyn-Roberts.
- Group discussion between presenter and participants.
- Participants’ individual assessment of the papers they have brought with them.

2. Making an Effective Conference Poster (half-day programme)

Participants should bring examples of conference posters. These will be analysed during the course.

Aim
To help participants construct for a conference a display poster that effectively communicates the essential elements of a piece of scientific work.

To be covered
Features of posters that viewers like; planning; design and structure of information; figures and tables; effective and ineffective features of posters; review checklist.

Method of learning
- PowerPoint presentation by Heather Silyn-Roberts.
- Discussion of the requirements.
- Participants’ assessment and grading of posters (posters brought by participants, photos).
3. **Making an Effective Seminar or Conference Presentation (1 day, maximum 12 students per day)**

Each participant should prepare beforehand a five-minute oral presentation (with visual aids: Powerpoint or overhead foils) on an aspect of his/her work. Each presentation is given once, then improved and presented a second time.

**Aim**
To help participants learn how to use the skills of rhetoric, structuring of information, and preparation of visual aids to present scientific information in a professional manner at a conference or seminar.
To learn what to avoid doing.

**To be covered**
Guidelines for beginners; types of notes; structuring a presentation; using overview information at the beginning and end; dealing with detail; spoken style; wording (your own, visual aids); designing visual aids; delivering the talk; dealing with needing to pause, interruptions, finishing in a hurry; answering questions.

**Method of learning**
- All participants will present a prepared five-minute seminar based on their work. Each presentation is followed by group discussion analysing the effective and ineffective points.
- PowerPoint presentation by Heather Silyn-Roberts of what to do and what not to do when making a scientific presentation.
- Time allowed for participants to improve their presentation, followed by the second, improved version by each participant. Group discussion after each presentation. Also practice in finishing in a professional manner when one’s time has run out.
- **NOTE**: each participant who has gone through this course has shown a marked improvement in presentation technique and confidence in the second presentation.

**Biographical details of the presenter**
Heather Silyn-Roberts, BSc Honours, PhD (Biomechanics), was educated in Great Britain and is Senior Lecturer (equivalent to C3 professor) in Mechanical Engineering at the University of Auckland, New Zealand. Her main teaching responsibility is the four-year core programme in Professional Development in the Faculty of Engineering. She has a long connection with the University of Tübingen; she was a post-doctoral fellow there in Biomechanics in 1985-6, and has since returned nearly every year.

She has run annual programmes in scientific communication for graduate schools in MPIs and universities in Germany since 1997. She speaks German; the course is run in English so that participants gain experience in clearly spoken scientific English, but questions can be taken and answered in German if necessary. Her research background is a combination of biological sciences, engineering, physics and medicine, and she is at ease in all scientific disciplines. She also has a very broad working knowledge of non-scientific disciplines.

In addition to working with undergraduate and graduate students, she also acts widely in Australasia as expert consultant to large engineering organisations that need to improve their documentation.

She has written three books (one now in its second edition):


Programmes run in Germany 1997-2004

• 2001-2004 annually: International Graduate Programmes in Molecular Biology and Neurosciences, Göttingen (University of Göttingen, MPI f. Biophysical Chemistry, MPI f. Experimental Medicine, German Primate Centre, European Neuroscience Centre).
  Journal paper, Poster, Oral Presentation. In addition, 2003: MSc students: writing up lab work and seminar presentation.

  Journal paper, Poster.

  Journal paper, Poster, Oral Presentation.

• 2004: Max Planck Institute for Biophysical Chemistry, Göttingen.
  Journal paper, Poster, Oral Presentation.

• 2003: Graduiertenkolleg Zellbiologische Mechanismen Immunassozierter Prozesse, University of Tübingen.
  Journal paper.

• 2003: Summer School: The Baltic Sea Region 2010, Theories, Methods and Practicalities, Greifswald.
  Journal paper, Poster, Oral Presentation.


• 2003: Graduiertenkolleg Kognitive Neurobiologie, University of Tübingen.
  Journal paper, Poster.

• 2002, 1999: Graduiertenkolleg Chemie in Interphasen, University of Tübingen.
  Journal paper, Poster, Oral presentation

• 2002: Graduiertenkolleg Infektionsbiologie, University of Tübingen.
  Journal paper, Poster, Presentation.

• 1999: Graduiertenkolleg Neurobiologie, University of Tübingen.
  Journal paper, Poster, Presentation.

• 1999: Hygiene Institut, Abteilung Hygiene und Umwelthygiene, University of Tübingen.
  Journal paper, Poster, Presentation.

• 1999: MPI. F. Immunbiologie, Freiburg.
  Journal paper.

  Journal paper.

• 1997: Faculty of Physics, University of Tübingen.
  Journal paper.
Assessment of courses by participants
Each course is assessed every year. Assessment forms are available for inspection if required. On a scale of 1 to 4, the courses have achieved each year 1.0-1.38 on all aspects assessed.

Typical comments on the assessment forms from 2002/2004

International Graduate Programmes in Molecular Biology and Neurosciences, University of Göttingen
- Was an amazing experience… helped me understanding many aspects which would otherwise have gone unnoticed.
- Very good discussion.
- The lecture was so wonderful that I found I conquered my fear to give oral presentations in front of a big audience.
- Everything was just wonderful.
- A lot of detailed knowledge was presented, very useful for the future. Nice critics and a great handout!
- Very useful and motivating.
- There was a lot of friendly interaction between Heather and the students.
- It was very pleasant to interact with her. She is a lovely person and very experienced in the field (and very polite to say good and bad things!).

Interdisziplinäres Forschungszentrum f. Klinische Zellbiologie, University of Tübingen
- This was the best course I have ever had. Thank you!
- Excellent.
- Hervorragendes Seminar! Grossartig gemacht! Sehr Hilfreich!
- Sehr eingagierte, angenehme Referentin!
- Hervorragende Didaktik. Wenn nur alle Seminare/Vorträge so wären!
- Viele Verbesserungsvorschläge für mein nächstes Poster.
- Sehr umfangreich, aber Thema wurde äußerst unerhältlich und excellent strukturiert dargestellt.
- Viel gelernt.
- Shr nützliche Informationen kompakt präsentiert in entspannter Atmosphäre! Jeder Zeit wieder!

MPI f. Plasmaphysik, Greifswald
- Especially useful if you have never published a paper before.
- Being a first semester student this program is very effective for me to develop my scientific career. Thanks a lot.

Summer School 2003: The Baltic Sea Region 2010, Greifswald
- Ich war begeistert über Ihre Teilnahme an unsere Summer School – weil die Studenten hellauf begeistert über Sie waren!! (Director)
- I wish to thank you again for the unforgettable and joyful experience of your course. I have been enthusiastically telling the people around about how wonderfully you communicate a very necessary subject.
- We all agreed that your course had been the best part of the whole week. I myself had enjoyed it immensely and have sang your praises to everyone here in Stockholm after coming home.

MPI f. Polymerforschung, Mainz
- I am really glad that I take part in such a useful workshop.
- We should have all the books of Heather in the MPIP’s library for intensive use.

Graduiertenkolleg Chemie in Interphasen, University of Tübingen
- Extremely nice atmosphere. I think it even brought the different members of the Graduiertenkolleg closer together.
- Die Veranstaltung hat mir wirklich geholfen!

Graduiertenkolleg Infektionsbiologie, University of Tübingen
- I really learned a lot and it was very helpful to my current and future work! Thank you!
- I can absolutely recommend Heather and her course to everybody! Great atmosphere and there’s a lot to learn! Thank you very much !!!
- The course was great and we got all questions we had answered. It was good to exercise the oral presentation up to three times.