

# Teaching scientific writing to non-native English speakers

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## Abstract

Scientists and clinicians around the world are facing the tyranny of publishing in English in journals with high-impact factors. The workshop format is not suitable for language teaching. Participants in workshops on scientific writing whose first language is not English should therefore be taught the structure of scientific manuscripts. Once a manuscript is properly organised, the English can be improved by a native-English-speaking person, preferably an author's editor. As an example, I describe the basic design of a 3-day workshop on scientific writing for non-native English speakers. Specialists in scientific writing are not necessarily language teachers; the skill should be taught as a subject in its own right, preferably as part of general training in research.

**Keywords:** Scientific writing, Teaching, Workshop, Non-native English speaker

Scientists and clinicians all over the world want to publish in 'international journals', which is a euphemism for English-language journals. The top 20 impact factor scores in 2012 were for journals published in Canada, the United Kingdom, or the USA.<sup>1</sup> Those who decide to sign up for a workshop in scientific writing (or who are sent by their superiors) want to (or are obliged to) have their papers published in high-impact-factor journals.

The institutions that express interest in a workshop on scientific communication have various expectations, but their main aim is to try to increase their rate of publication. A university, such as the University of Malaya in Kuala Lumpur, Malaysia, may have the specific aim of becoming one of the top 100 universities in the world, which depends entirely on the number of publications from the university that are published in journals with a high Thomson Reuters impact factor. Other institutions, such as the Academy of Science and Technology in Dakar, Senegal, may just wish to introduce researchers and clinicians to the idea that they should try to publish.

English is often the participants' third or fourth language. For instance, in many countries in north and west Africa, a participant will speak a local dialect, the national language, and French as their first three languages. What, therefore, is the best way to approach the teaching of scientific writing?

A common misunderstanding is that the workshop will help the participants to improve their English. Most of the workshops advertised on the Internet and elsewhere last a maximum of 3 days and are usually much shorter – half a day. The short workshop mode, in which there may be as many as 20 participants, is unsuitable for language teaching, as there is little chance for meaningful exchanges between participants and the workshop leader. A few pointers can be given for correct use of grammar and avoiding obvious grammatical errors, but it is not realistic to expect that the participants' command of English will be improved within a few days.

The participants who attend a workshop in scientific communication must be screened to ensure that they have a sufficient command of English to understand the presentations of the facilitator. In most contexts, the discussion among the participants is also held in English, although certain aspects may give rise to heated exchanges in the local language. It is important for the facilitator to insist on a summary in English of such exchanges, both for mediating the discussion and to familiarise the participants with the vocabulary associated with the topic.

The facilitator therefore should emphasise from the beginning that language is not a problem, at least not in writing a first draft of a manuscript. Participants should be told to concentrate from the beginning on the *structure* of the article, on the premise that an article that is logically organised is easier to understand than one that has no clear beginning or end. Furthermore, it will be easier for an editor to correct any problems of language if the organisation of the paper is clear. One of the main problems in most draft manuscripts is that

the question being addressed is not stated clearly. Every form of scientific communication must start with the answer to the question ‘Why did you start?’ If readers are not given the context of the study, they are unable to situate its importance within the field. Also, once the author has the answer to that question clearly in mind, he or she will find writing the rest of the paper easier.

The next questions that must be answered, in order, are ‘What did you do?’, ‘What answer did you get?’ and ‘What does it mean?’ in the refreshingly clear outline presented by Austin Bradford Hill in the 1960s.<sup>2</sup> The participants are shown that the answers to these apparently simple questions are the basis for the IMRaD structure (Introduction, Materials and Methods, Results and Discussion).

Workshops are often didactic, based on presentations by the facilitator and on handouts, as in many settings the participants have little experience in writing scientific papers and cannot participate in discussions on the material being presented. One way of involving participants is to use their own draft manuscripts to illustrate each aspect of scientific communication. It might be thought that this practice, with comments and criticisms being made at every step by both participants and the facilitator, would give rise to hurt feelings and resentment. In my experience of 35 years of teaching scientific communication to a total of perhaps 2000 participants, this has happened only once. Exclamations of ‘Oh, everything’s wrong with my paper!’ are countered with assurances that all the information is there but it must be better organized. As in any teaching situation, participants must constantly be encouraged and assured of their competence. ‘You’re the scientists [clinicians]. You know the subject area. You read papers in English all the time and understand this topic much better than I do.’

As an example, I describe a 3-day workshop on scientific writing for non-native English speakers. This workshop is designed to give non-native speakers of English a basic understanding of writing scientific articles for international journals. The workshop does not include English-language teaching.

### **A 3-day workshop on scientific writing for non-native English speakers**

My 3-day workshops are based on three manuscripts offered by participants, with the understanding that they are confidential documents and that all copies must be returned to the participant at the end

of the workshop. Before the workshop, all participants are sent and asked to read the three manuscripts.

Participants also receive several handouts:

- The latest version of the Uniform requirements for manuscripts submitted to biomedical journals: writing and editing for biomedical publication of the International Committee of Medical Journal Editors (ICMJE).<sup>3</sup>
- A set of checklists for each part of the paper and for revising subsequent drafts.
- A table illustrating the basis for choosing certain types of graphs.
- The structure of a discussion as proposed by the British Medical Journal.<sup>4</sup>
- Lists of words and phrases that can be simplified.
- A summary of a 1-hour presentation on writing style, given at the end of the workshop.

#### *Beginning of the workshop*

At the beginning of the workshop, I ask the participants to introduce themselves, to describe their experience in writing and what they expect to gain from the workshop. Their experience may not necessarily include writing manuscripts for publication but may be in writing reports or a thesis. These introductions allow me to judge the participants’ command of English. Their expectations often include improving their English, and I gently explain that this is not possible but that improving the structure of their manuscript will make it easier for the editor of the journal, the reviewers and readers to understand it.

#### *Searching the literature and selecting a journal*

Next, there is discussion among the participants on literature searching, in which they inform each other about the resources available to them at their institution and also about how to record the information they find, such as in EndNote.<sup>5</sup>

They are then told to choose the journal in which they wish to have their paper published. This always creates some surprise, but I make it clear that journals differ in small and large ways, and a manuscript written with a specific journal in mind will have a better chance of being considered by that journal.

#### *Detailed discussion of a paper*

The three manuscripts are then used for detailed discussions on each aspect of a paper. I describe the functions of each element, with the checklists;

then, the participants comment on the examples. Does the title accurately, clearly, and concisely describe the content of the paper? Is it informative? Does it contain the main key words?

An issue that often gives rise to a discussion is authorship. Although participants are made aware of the criteria established by the ICMJE, it is important to allow discussion about applying those criteria in the local institutional context. The facilitator must show respect for established local customs, while at the same time pointing out the advantages of applying the ICMJE criteria, which the participants almost always recognise.

Several hours are spent on improving the abstracts. Participants are reminded that this is the part of the paper that will be most widely read (perhaps the only part) and that it must faithfully reflect each section of the paper, answering each of Bradford Hill's questions. Time is spent on making sure the proportions of text used to answer each question are suitable and on refining the wording, to make every word count.

The remaining sections of the manuscript are discussed during the rest of the first day and the second. Towards the end of the second day, there is a discussion on submitting the manuscript to the journal, including the letter to the editor that accompanies it, and a short presentation on writing style. It is interesting that scientists whose first language is not English are more resistant than native speakers to the idea of simplifying language. They are quite comfortable with using a phrase like 'implementing a learning process' instead of 'teach'. The ghastly phraseology that has crept into scientific discourse<sup>6</sup> seems normal to them, and they are resistant to the idea that they can write the way they speak.

On the third day, participants are given an article that has no title or abstract and are asked to work in groups of four to five to write a title, an abstract and keywords and to comment on the structure of the article. The whole group reconvenes to discuss the results. This gives me a chance to see how well the principles of writing have been understood. If time permits, I edit the abstracts on screen to illustrate some of the points of writing style.

#### *Time for questions*

If there is time, the facilitator can answer any remaining questions from the group, such as

showing how the structural principles apply to other forms of scientific communication, such as literature reviews, case reports, oral presentations, and posters.

#### *Evaluation of the workshop*

To evaluate the usefulness of the 3-day workshops, I invite each participant who brought a manuscript to revise it on the basis of the workshop comments and to send it to me for English-language editing before they submit it to the journal of their choice. I also ask to be kept in the loop of reactions from the editor of the journal and reviewers' comments and offer to help the author to respond and follow-up the paper until publication. Similarly, workshop participants who did not bring a manuscript are invited to send the first manuscript they write after the workshop to me for editing and follow-up to publication. When I first proposed this, I thought I would be overwhelmed with manuscripts; however, I received only one or two manuscripts from each workshop. Does this mean that the participants did not subsequently write papers or that they were too timid to send them? It is difficult to say without actually e-mailing all 2000 participants I have had over the years.

## **Conclusion**

If scientific writing became part of teaching on scientific method and conduct, it would finally assume its proper position in a student's training. There is little training in this field, and the training that is available often centres on teaching grammar and spelling. Specialists in scientific communication are not necessarily language teachers – scientific communication should be taught as a subject in its own right, with English-language teaching as a completely separate course.

## **References**

1. <http://impactfactor.weebly.com/medicine.html>
2. Hill AB. The reasons for writing. In: Report of Editors' Conference. *Br Med J* 1965;ii(5466):870.
3. [http://www.icmje.org/urm\\_main.html](http://www.icmje.org/urm_main.html)
4. Docherty M, Smith R. The case for structuring the discussion of scientific papers. *BMJ* 1999;313:1224–5.
5. <http://endnote.com/>
6. Langdon-Neuner E. 'Scientific' writing. *The Write Stuff* 2009;18(2):69–72.

## Author information

**Elisabeth Heseltine** received an MSc in Canada and a PhD in Neurophysiology in the United Kingdom. She has worked for various international agencies, such as the World Health Organization, and for national institutes such as the Danish Cancer Research Centre and the

Institute Pasteur. She began running workshops in scientific writing 30 years ago and has taught in 30 countries. The workshop is described on her website: [www.communicationinscience.com](http://www.communicationinscience.com).

## Certificate and degree programs in Medical Writing

Program	Location	Cost	Description and comments	Website/contact
EMWA certificates in medical writing	European Medical Writers Association; requires attendance at multiple conferences in Europe	Cost varies	For professional medical writers; requires attendance at several conferences and membership in EMWA	<a href="http://www.emwa.org/training.html">http://www.emwa.org/training.html</a>
MSc in Medical Writing	Medical University of Innsbruck, Austria	Approximately €15,000-18,000 for 2 years	Course currently being restructured. Will restart in Fall 2013. Expected to include 1 week/year onsite and the remainder online.	Michael Nogler <a href="mailto:michael.nogler@professor-nogler.at">michael.nogler@professor-nogler.at</a>
PGCert in medical communications	University of Worcester, UK	€1800	Part-time on site over one year; three 20-credit modules; combination of in person on weekends and online	<a href="http://www.worcester.ac.uk/courses/medical-communications-pgcert.html">http://www.worcester.ac.uk/courses/medical-communications-pgcert.html</a>
Master's in medical writing and certificates in regulatory writing and in marketing writing	University of the Sciences, Philadelphia, PA, USA	€38,000 for Masters, €13,500 for certificates	Courses online	<a href="http://www.gradschool.usciences.edu/biomedical-writing/biomedical-writing-program-overview">http://www.gradschool.usciences.edu/biomedical-writing/biomedical-writing-program-overview</a>
Certificate in medical writing & editing	University of Chicago, USA	€1150 per 3-day course, 4 courses required for certificate (€4250 total)	Taught on site in Chicago or online	<a href="https://grahamschool.uchicago.edu/content/medical-writing-and-editing">https://grahamschool.uchicago.edu/content/medical-writing-and-editing</a>
AMWA certificates in Medical Writing	American Medical Writers Association; requires attendance at multiple conferences in the US	Cost varies	For professional medical writers; certificate available, requires attendance at several conferences and membership in AMWA	<a href="http://www.amwa.org/default.asp?id=250">http://www.amwa.org/default.asp?id=250</a>