CHAPTER 1

How to use this book

1.1 Getting started with writing for international publication

This book is for all authors who want improved strategies for writing effective scientific papers in an efficient way, including those new to the task. The focus is on writing in English, but many of the strategies are equally effective for writing science in other languages. Plurilingual authors – those using English as an additional language (EAL) – will find their situations and needs addressed alongside those of authors with English as a first language (EL1), as well as those common to both groups.

In this book, we will use other terms as well as *paper* for what you are aiming to write: it may be called a *manuscript*, a *journal article*, or a *research article*. (See Chapter 2 for comments on other types of scientific articles, Chapter 12 for writing review articles, and Chapter 18 for how to apply the book's approach to writing funding grant proposals.) All of these terms are in use in books and websites providing information and advice about this type of document: this *genre*. The concept of genre is important for the way this book works, as we have based our approach in writing it on the findings of researchers who work in the field of genre analysis. These researchers study documents of a particular type to identify the features that make them recognisable as what they are.

One of the key concepts in use in this field of research is the idea of the *audience* for a document as a key factor in helping an author write effectively. Whenever you write any document, it is helpful to think first about your audience: whom do you see in your mind's eye as the reader of what you are writing? The idea of audience belongs as part of a "communication matrix" made up of four elements: *audience* (as described in the previous sentence), *purpose* (what do you want the document to achieve?), *format* (how will the required format constrain how you write the document?), and *assessment* (what criteria will be used to decide if the document is successful?). We will use all the elements of this matrix to guide our discussion of the genres we will analyse in the book, and we begin now by thinking about the audience for a scientific research article.

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Who is your audience?

Often the audience that you think of first is your scientific peers – people working in areas related to yours who will want to know about your results – and this is certainly a primary audience for a research article. However, there is another "audience" whose requirements must be met before your peers will even get a

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chance to see your article in print: the journal editor and reviewers (also called referees; see Chapters 3, 13, and 14 for more information). These people are often thought of as gate-keepers (or as a filter), because their role is to ensure that only articles that meet the journal's standards and requirements are allowed to enter or pass through. Therefore, it can be useful from the beginning to find out and bear in mind as much information as you can about what these requirements are. In this book, we refer to these requirements as reviewer criteria (see Chapters 3 and 14 for details), and we use them as a framework to help unpack the expectations that both audiences have of a research article written in English. We aim to unpack these expectations in two different but closely interrelated ways – in terms of:

- the content of each article section and its presentation; and
- the English language features commonly used to present that content.

To do this, the book uses an interdisciplinary approach, combining insights from experienced science authors and reviewers about content with those from specialist teachers of research communication in English about the language. Elements of language that are broadly relevant to most readers of the book will be discussed in each chapter. In addition, Chapter 17 focuses on ways in which users of EAL can develop the discipline-specific English needed to write effectively for international publication. This chapter can be studied at any stage in the process of working through the book, after you have completed Chapter 1.

1.2 Publishing in the international literature

If you are going to become involved in publishing in the international literature, there are a number of questions it is useful to consider at the outset: Why publish? Why is it difficult to publish? What does participation in the international scientific community require? What do you need to know to select your target journal? How can you get the most out of publishing? We will consider these questions in turn.

Why publish?

We have already suggested that researchers publish to share ideas and results with colleagues. Other reasons for publishing include

- to leave a record of research which can be added to by others;
- to receive due recognition for ideas and results; and
- to attract interest from others in the area of research.

However, there are two additional reasons that are very important for internationally oriented scientists:

- to receive expert feedback on results and ideas; and
- to legitimise research; that is, to receive independent verification of methods and results.

These reasons underscore the importance of the review process we discussed earlier. However, there are difficulties associated with getting work published – difficulties

that operate for all scientists, plus some that are specific to scientists working in contexts where English is a foreign or additional language.

Why is it difficult to publish?

In addition to any language-related barriers that spring to mind, it is also important to realise that writing is a skill, whatever the language. Many of the points covered in this book are equally important for EAL and EL1 scientists. In addition, because most science research contexts are now multilingual and multicultural wherever they are located, an overt focus on the role of language in writing for publication will benefit all players, from novices to mentors.

Getting published is also a skill: not all writers are published. Some reasons for this fact include the following:

- not all research is new or of sufficient scientific interest;
- experiments do not always work – positive results are easier to publish; and
- scientific journals have specific requirements which can be difficult to meet – publishing is a buyer's market.

These issues will be addressed as you proceed through the book.

Another reason that researchers find the writing and publication process difficult is that communicating your work and ideas opens you up to potential criticism. The process of advancing concepts, ideas, and knowledge is adversarial, and new results and ideas are often rigorously debated. Authors facing the blank page and a potentially critical audience can find the task of writing very daunting. This book offers frameworks for you to structure your thinking and writing for each section of a scientific article and for dealing with the publishing process. The frameworks provided will allow you to break down the large task of writing the whole manuscript into small tasks of writing sections and subsections, and to navigate the publishing process.

What does participation in the international scientific community require?

A helpful image is to think about submitting a manuscript to an international journal as a way of participating in the international scientific community. You are, in effect, joining an international conversation. To join this conversation, you need to know what has already been said by the other people conversing. In other words, you need to understand the "cutting edge" of your scientific discipline: what work is being done now by the important players in the field internationally. This means:

- getting access to the journals where people in the field are publishing;
- subscribing to the e-mail alert schemes offered by journal publishers on their websites so that you receive tables of contents when new issues are published; and
- developing effective skills for searching the Internet and electronic databases to which you have access.

Without this understanding, it will be difficult to write about your work so as to show how it fits into the progress being made in your field. In fact, this knowledge is important when the research is being planned, well before the time when the paper is being written: you should try to plan your research so it fits into a developing conversation in your field.

Active involvement in international conferences is an important way to gain access to this international world of research in your field. Therefore, you need confident skills in both written and spoken English for communication with your peers. This book aims to help with the written language as used in international journals, and some ideas for developing spoken science English are given in Chapter 16. As you become a member of the international research community in your field in these ways, you will develop the knowledge base you need to help you select the most appropriate journal for submission of your manuscript: we call this your *target journal*.

What do you need to know to select your target journal?

Choosing the right journal for your manuscript will influence the chance of getting published relatively easily and quickly. You should be thinking about the journal you want to publish in from the beginning of your research, and should have made a choice by the time you begin to write the Introduction and Discussion sections of your paper.

The right journal for you is the journal which optimises the speed and ease of publication, the professional prestige you accrue, and the access for your desired audience. These factors are interwoven, and it can be helpful to develop a publication plan to maximise your publication success. The journal of your choice may not choose to accept your article, and you are advised to have a list of preferred journals to turn to if you are rejected from your first choice. Here, we set out some issues to consider when choosing a journal for your manuscript:

- Does the journal normally publish the kind of work you have done? Check several issues and search the journal website. It is helpful if you can cite work from the journal in the Introduction of your manuscript, to show that you are joining a conversation already in progress in the journal. Examine some of the key articles you refer to in your Introduction, and check which journals are cited in the Introductions of these articles. By following back through the literature, you should be able to develop a mind-map of the journals in the field of your research. The journals that are most often cited in the Introduction and Discussion sections of your manuscript will be most likely to accept work in your field.
- Do the aims and scope of the journal match the content and the level of impact of your work for the field? Check the websites or issues of potential journals to identify those with scope and aims most appropriate for your manuscript. In this way, you can try to ensure that your article will reach the audience you want to read it, once it is published.
- Is the journal of an appropriate standard for your needs? First, does it referee its papers? This is absolutely imperative for enhancing the international credibility of your work. It may also be important to check the journal's impact factor, if this measure is important for assessing research outcomes in your country or research context. (See Appendix for more information on impact factor, citation index, and other similar measurements.)
- Does the journal publish reasonably quickly? Many journals include the dates when a manuscript was received and published underneath the title information, so you can check the likely timeline. Others include this information on their websites. Journals which publish online versions of papers before the print version will usually have a faster time to publication. Journals want to publish submissions

quickly to ensure they attract authors who are doing innovative and new work. You may also want to publish your research quickly to ensure that others do not publish similar work before you, and to increase your publication and citation record for promotions and grants.

- Are there charges associated with publishing in the journal? Some journals charge authors a fee to publish, or to publish coloured illustrations. Check whether this is the case. If so, you can ask whether the journal is willing to waive these charges for authors in some parts of the world. You may also want your research to be accessible to a wide range of readers who do not have access to libraries or other subscriptions to journals in your field. Many journals now offer to provide Open Access to papers (i.e. to make them accessible for free download without subscription to the journal) if the authors pay an upfront fee. Check whether the journal of your choice offers this service if you want (or are required by your institution or funding body) to pay for Open Access.
- Are members of the journal's editorial staff efficient and helpful? For example, some journals have information on their website with targeted advice for authors from EAL backgrounds. You may be able to ask colleagues who have submitted to particular journals about their experiences. It can be useful to share this kind of information among colleagues in your laboratory group or work team, perhaps as part of a programme to encourage international publication of the work of your institution or group.

How can you get the most out of publishing?

Publishing quickly is often helpful. In addition, publishing in a widely read journal is better for you (higher citation index; see Appendix). However, if you aim too high in relation to the international value of the work you have done, you may be rejected, and resubmission takes more time. These two issues have to be balanced carefully to determine an optimal strategy for your particular situation. Finally, publishing where your peers will read your paper is important. Use Task 1.1 to summarise your understanding and complete Table 1.1. Discuss the outcomes with your co-authors to develop your publication strategy.

Task 1.1 Analysing potential target journals

To optimise the outcomes from publishing your manuscript, we recommend that you develop a publishing strategy. Part of this strategy is to select the best journal for submission. In order to make this choice, first select three or four preferred journals in your field that you think would accept your manuscript. Then answer the following questions for each one and record the answers in Table 1.1:

1 Has the journal published similar work with a similar level of novelty to yours in the last 3 years? Record a "yes" or "no" (if "no," think carefully before submitting your manuscript to this journal).
2 Do the journal's scope and the contents of recent articles match the main components of your manuscript, in terms of subject, methods, and results? (Write down the main type of papers published, e.g. "plant physiology: non-molecular studies").

3 What is the measure of relative journal quality/impact which is most important to you and your field of research? Record the score or measure for each journal (e.g. journal impact factor or journal cited half-life).
4 What is the journal's time to publication? (This may be on the journal's website or recorded for articles in the journal.) Record the time or a score for fast or slow (e.g. less than 3 months from acceptance = fast; more than 1 year = slow).
5 Does the journal have page charges or provide Open Access if you want it? (And can you pay if payment is required?)

Examine the journal scores you have recorded in Table 1.1 and rank your preferred journals in order of overall preference, taking all criteria into consideration.

Table 1.1 Rating preferred journals in terms of key criteria for maximising your publication success.

Journal name	Recent publication of similar work and novelty	Match of scope and recent content to your work	Journal quality/ impact	Time to publication	Page charges or Open Access costs
1					
2					
3					
4					

This publication strategy should include making appropriate use of relevant forums or networks, both local and international and both in-person and via social media, to publicise your article and its findings upon publication – but the first step remains getting published in your selected target journal.

Once you have thought about the issues raised here, and made some preliminary decisions about a possible target journal, you are ready to move on to consider the aims of this book.

1.3 Aims of the book

The aims of the book are to provide you, the reader, with:

- an improved understanding of the structure and underlying logic of scientific research articles published in English in the international literature;
- an overall strategy for turning a set of results into a paper for publication;
- skills for analysing the structure and language features of scientific articles in your own discipline, and for using the results of this analysis to improve your own scientific writing;
- knowledge of the stages involved in the process of submitting an article for publication, and strategies for completing each stage;
- knowledge and basic mastery of the specific English language features commonly used in each section of published articles;

- strategies and tools for improving your drafts, such as structured checklists, ways to strategically re-use relevant language elements, special-purpose software, and discipline-specific writing groups; and
- a process for completing a draft of an article on your research results, prepared in the style of the journal to which you wish to submit.

1.4 How the book is structured

Two principles underlie the way we have organised this book: that people learn best by doing; and that you will want to continue developing your skills on your own or with colleagues in the future, even if you first encounter the book in a classroom environment. Therefore, we aim to show you how you can use examples of journal articles, from your own field and from others, to learn more about writing for publication.

To achieve this goal, the book will often invite you to discuss examples with a colleague and then report to a larger group. This assumes that you are using the book in a class situation. However, if you are using it for individual study, you can note down your answers and then revise them once you reach the end of the section. As we move through the book, you will also have the opportunity to draft (or substantially revise) your own article, section by section, if this is appropriate.

Instructions for activities in the book will use the following terms to refer to different categories of example articles:

- **Provided Example Articles (PEAs)**: these are three articles chosen by the authors of the book and included in full at the back (Chapters 19, 20, and 21). You will use all three in the early sections of the book and then be asked to select one to use in more detail.
- **Selected Article (SA)**: this is an article that you will choose from your own field of research and that may be from your target journal. Use Task 1.2 to choose your SA.
- **Own Article (OA)**: this is the draft manuscript you will write using your own results as you progress through the book. If you do not yet have your own results, you can skip the tasks relating to the OA and come back to them later.

Task 1.2 Selecting an article to analyse

Select an article in your own field of research to use as your Selected Article (SA), preferably from your target journal and preferably written by a first-language speaker of English (check authors' names and the location of their work sites to help identify their language background). We suggest that you do not choose your SA from *Nature* (UK) or *Science* (USA), as they use conventions that are very different from those of most other journals – it will be more useful to learn the standard conventions first, and then adapt them later if you need to. (See Chapter 2 for more details on the differences in article structure.)

The following sections of the book work like this.

- We present information about the structure of research articles, section by section, which has been summarised from the work of scholars in the field of applied linguistics over the last 20 years. We present this as a *de*scription, not a *pre*scription: that is, "this is what the scholars have found," not, "this is what you should do." We do this because there are many effective ways to write articles, not just one way. Our aim is to help you develop a repertoire (a range of effective possibilities) to select from, depending on the goals you have for a given article section.
- We then ask you to look at the relevant section of the PEAs and check whether you can find the described features there (answers to the Tasks can be found in the Answer pages at the end of the book).
- Next, we ask you to analyse your own SA for the same features and think about possible reasons for what you find.
- Finally, we ask you to work on the draft of your OA, using the new information you have gained from the analysis. (These sections are optional for readers who do not have their own results ready to write up.)
- As well as this analysis of structural features, the book includes teaching, analysis, and exercises on elements of English language usage that are particularly relevant to each section of a research article (again, solutions can be found in the Answer pages). If English is your first language, you may choose to skip some or all of these sections. However, they may be helpful when you are mentoring or co-authoring with colleagues from EAL backgrounds – a common requirement of 21st-century science workplaces.
- After all the sections of a research article have been covered in this way, we demonstrate how to apply the same principles to writing a review article for submission to an international journal.
- We then focus on the process of submitting the manuscript to the journal, and how to engage in correspondence with the editor about possible revisions.
- Chapter 15 summarises a process for preparing a manuscript from first to last, using the knowledge built up through your engagement with previous chapters on each article section, and including strategies for editing and checking.
- Chapter 16 focuses on techniques and strategies for ongoing development of your skills for writing, publishing, and presenting your research in English.
- Chapter 17 provides advice about specific features of science writing that often cause problems for EAL authors. It can be studied at any stage of a reader's progress through the book.
- Chapter 18 considers the writing of proposals for research funding and shows how to apply the book's strategic approach to this important component of 21st-century science.
- Section 5 contains the three PEAs (Chapters 19, 20, and 21).
- At the end of the book, you will find Answers to the tasks that appear in the other chapters, an Appendix containing details of journal impact assessment, and the Reference list.

1.5 How to use this book if you are. . .

. . . a research student getting ready to write a manuscript

- After reading Chapter 1 you will have a good idea of where to go next. The logic of the book follows the chapter numbers.

- Chapter 3 is essential reading for what follows.
- All of Section 2 comes next, but Chapter 12 may be left till it is relevant for you.
- Chapter 15 sets you up to begin writing.
- Chapter 16 contains ideas for ongoing skill development; implement the ones most relevant to your situation, including setting up a writing group if appropriate.
- Chapters 13 and 14 give valuable background to the task ahead in terms of submitting and the review process.

…a research student or early-career researcher drafting your manuscript

- Revisit the parts that contain advice specific to your stage of writing, making sure that Chapters 2 and 3 are understood as a basis.
- Chapters 4–11 give you the base you need to use the process set out in Chapter 15 as a commencing strategy (plus Chapter 12 if you are writing a review paper).
- Consult Chapter 13 in detail before the drafting is completed, and Chapter 14 both before submission and again once the reviews arrive.

…an author using English as an additional language (EAL)

- Over and above the advice relevant to your stage of writing, Chapter 1 has introduced you to our approach to developing discipline-specific English skills as an integral part of writing for publication training.
- Chapter 17 can be read at any stage of your engagement with the book. We especially recommend Section 17.4; our experience over many years indicates that EAL authors report positive outcomes when they have taken the time to construct their own discipline-specific research article corpus and learned to use concordancing software.

…a scientist instructing or mentoring research students or junior colleagues

- The book can be provided to students and early-career researchers as a stand-alone resource, and strategies discussed in Chapter 16 can be used to enhance its effectiveness.
- Promising outcomes have been reported when a scientist uses the book as the basis of a Writing Group programme for research students, in an Australian context of no coursework in research degree programmes (Cargill & Smernik 2016).
- In a Chinese context, collaborative input from a scientist into a course taught from an English for Research Publication Purposes perspective has been analysed, and ways in which it can be more than a "cameo" role identified (Li et al. 2019). Collaborative, interdisciplinary teaching of the book's contents is highly recommended (Cargill & O'Connor 2010).

…a language professional teaching science research students or providing advice on draft manuscripts

- Throughout, the book provides language professionals with a thorough introduction to the specifics of science research article writing from a content perspective, while integrating language concerns at every stage.

- The approach described in Section 17.4 is a useful tool when providing advice on draft manuscripts, using concordancing software with a discipline-specific corpus of research articles. It is also useful for identifying discipline-specific examples for teaching purposes.
- Chapter 17 provides pointers to some English language features that have been identified as regularly troublesome to EAL authors.
- The book, or selected parts of it, can be used as the basis of courses for research students where the degree structure includes coursework (Cargill et al. 2018), or of workshops where it includes only research (Cargill 2019). Collaborative interdisciplinary teaching of the material by language specialists and scientists has been shown to be highly effective (Cargill 2011).