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WHAT IS GOOD PREPARATION OF A SCIENTIFIC ARTICLE?

Fernando Cardoso de Sousa
ISMAT, Portugal
cardoso_sousa@hotmail.com

Abstract

This text provides comprehensive guidance on the preparation and writing of scientific articles for novice researchers, emphasizing the importance of literature reviews, structured writing, and adherence to academic standards. It outlines the elements of a well-crafted article, including title, abstract, methodology, results, and discussion, while stressing the significance of clarity and coherence. The document also addresses the challenges of writing, and offers strategies for effective research and writing practices. By promoting a personalized approach to writing, it aims to open the bridge for enhancing the likelihood of article acceptance in reputable scientific journals.

Keywords: Scientific Writing; Literature Review; Research Methodology; Academic Standards; Article Preparation

Introduction

The answer to the question posed in the title of this text is far easier to write than to put into practice. Whenever the assessment is left to an observer, as in leadership or creativity, for example, no matter how many rules and checklists are added to define what constitutes a good execution, subjectivity remains, since it is the implicit theories of others that count, not those of the person carrying out the task. Thus, starting with the literature review, Hart (1998) considers this to be a critical and objective analysis of the literature (research or otherwise) relevant to the topic under study. The answer may be correct, but the difficulty lies in carrying it out, because whilst the literature review may be well done, it is the written text that will convey this quality in the eyes of examiners and reviewers. For this reason, this text aims to provide guidance that increases the likelihood of students having their article accepted by examiners and reviewers.

Thus, the document simultaneously seeks to suggest writing strategies and study methods that may help novice researchers to have their long-term work accepted and to proceed with the publication of the report in a reputable scientific

journal. As it is considered that, even when all techniques are mastered, what actually occurs in the writing of scientific reports is the progressive development of one's own style, this text will present a personalised perspective, supplemented with reading suggestions, rather than a systematic review of the existing literature on the subject.

An Exercise in Writing

Good writing is, fundamentally, an exercise in organisation; therefore, a researcher who 'writes well'—that is, who manages to present ideas in a coherent, objective and error-free manner—has, from the outset, a good chance of achieving an acceptable standard of quality. In fact, a good way of assessing skills may consist, quite simply, of asking the person to write around 400 words (one and a half pages, A4 size) on a topic of his or her choice, with a specific objective (e.g., "How to cook a particular dish"), in a text following the structure with an introduction, a body, and a conclusion ("state what you are going to say, say it, and summarise what you have said"). And, if one does so moving from the general to the specific, with objective and well-founded points, without embellishments or disjointedness, lists or separations between paragraphs, the guarantee that the person can adapt to scientific-style writing is assured. By "scientific style" we mean expressing oneself through the work of others, that is, stating one's argument by drawing on what established authors and researchers have already said. By "established" we mean those already recognised by the scientific community, those who publish in scientific journals included in reference databases (e.g., EBSCO, ProQuest, Emerald, SAGE, Elsevier, Copernicus, Thomson Scientific, PsycINFO) and in reports produced by universities and research centres. However, as the main search engine is still Google and, now, Artificial Intelligence (AI) applications, we cannot fail to consider the authors of freely available texts on the internet, specialist blogs and LinkedIn groups, and publications by prestigious consultancy firms such as Accenture, Gallup or Deloitte. Indeed, the so-called 'non-scientific' literature constitutes an important and up-to-date repository of the latest publications, as it has a closer connection to reality and is not, in general, subject to the lengthy process of editorial and peer review, which can delay publication by many months. It should be noted, however, that only so-called 'scientific' literature may serve as a source of references.

Still on the subject of writing, prospective researchers can be divided into two types: those who read and write English well, or are willing to make an initial effort to do so; and those who neither read it nor are prepared to make that effort, except for a text here and there. This difference will shape everything that follows, even if the researcher does not intend to publish in English. It will also influence much of the supervisor's

commitment, since the supervisor will, in principle, be very keen to publish in English, particularly if they are equipped to do so and can rely on the collaboration of a native speaker in the field.

Returning to the question of writing, it is important that the prospective researcher reads the methodological guidelines in force at their university, or others available online, such as those from Harvard (Carson, Fama & Clancy, 2008). And that, subsequently, they acquire a good grammar handbook and keep the APA Manual (7th ed.) at hand, since automatic correction does not go much beyond spelling and verb agreement; Google only clarifies the doubts of those who know enough to have them, and AI applications make suggestions that should always be verified, as they often make things up. In fact, even before thinking about the topic, one can start with a relaxed read of the APA Manual, the style guide, and one of the many books available on this subject, such as the now-classic work by Umberto Eco (Eco, 1977), simply to know where to look for things when needed. And, if the intention is to go on to publish articles, then it is essential to follow this suggestion: read something more systematic (e.g., Machi & McEvoy, 2012; Shah, 2010) and have one or two examples of well-written articles at hand.

Literature Review and the Start of Writing

Once the issue of preparing to write a text has been resolved, the next step is the literature review, in which the most difficult part is defining the title and objective, and ensuring the text remains consistent with that choice. This will be subject to many changes and redefinitions, particularly in the case of fieldwork research, where hypotheses will only become clearer towards the end of the investigation and, above all, when finalising the work for publication. Therefore, it is best to define a general objective and begin a similarly general search before worrying about very precise definitions. Using the inevitable chatbots, the university database (consult the University Library), or another of those already mentioned or one that is free, you can start with subject-specific journals, experimenting with keywords that describe the topic. The search can then be refined using operators (or, and, not) and other keywords that are found, bearing in mind that the best suggestions are in the books and articles deemed relevant to the topic. Another complementary strategy is to gradually refine the search terms to find what you are looking for.

A quicker way is to enter the title you have in mind for the work (in English) into chat rooms and search engines and see what comes up. When you find an article that seems to match what you're looking for (out of every ten abstracts read, there might only be one article of interest), see if you can find a book by an author mentioned in

the article, and start there. You can also search on Amazon, or on Questia, for something like an author's handbook, though sometimes a publisher's handbook may suffice. After reading a reference book, your knowledge will become more organised, allowing you to consolidate your initial notes and conduct a search for articles and other books suggested therein. If you can obtain them, you'll gather further notes, taking care not to let too much material pile up unread. The use of digital text managers can facilitate the organisation of texts and, in particular, ensure references are formatted correctly from the outset, as programmes such as Mendeley automate the creation of bibliographies in various styles, whil s facilitate the reading and storage of PDF documents, as explained in Gomes, Tavares & Sila (2022).

Once the selected books and articles have been read, underlined and notes taken (one should not read without taking notes, as this will later obviate the need to reread the source), it is time to consider organising the work by drawing up an outline of what is envisaged as the structure. At the very least, there must always be an introduction (background, relevance of the research, objectives and structure of the work); sections or chapters, moving from general to specific topics; and a section dedicated to studies similar to the intended one, from which suggestions regarding variables, treatments and possible results can be drawn, enabling the formulation of the problem and the hypotheses or propositions. However, unless the student has an absolute need for highly structured thinking, it is best not to worry too much about these initial outlines, as, in general, one ends up writing something quite different.

Once you have taken notes from a few books and dissertations, it is time to return to the articles, conducting searches and making occasional printouts, to which you will add so-called non-scientific readings taken from the Internet. It is fine to read topics from different sections, provided you keep everything organised and, in particular, compile the references according to the guidelines – one of the first lessons to be learnt from the APA Manual – at least for the main examples: author's book, editor's book chapter, scientific journal article and internet reference. Don't forget to check that the references comply with the guidelines and, if possible, keep them in a single file, which will prevent future headaches when you can't find the details of a citation.

Once you have a general overview of your chosen topic and have simultaneously begun your fieldwork, it is time to start writing (remembering to make regular backups of the files you have drafted), even though you know there is still a long way to go before you fully master the relevant topics. And write something coherent, not just short, unconnected fragments of thought. You can write

different sections of the work at the same time, but you should always do so in accordance with the principle that an idea must be presented with a beginning, middle and end. If the researcher manages to write but cannot recall the source, this is no cause for concern, as references can be added later. The key is to write coherent excerpts, comparing ideas and concepts, always supported by solid references. From a certain point onwards, the literature review becomes more practical, requiring an increase in the number of items read, but also a narrowing of the reading to those parts strictly necessary for the task at hand. When writing a scientific report, the pleasure of reading and even the pleasure of writing must be replaced by the pleasure of discovering facts, concepts and ideas that we wish we had discovered ourselves and, above all, of completing something that took a great deal of effort and which will amaze you as to how you managed to write so well, when you read the work again some time after the examiners or reviewers have approved the result.

Here's a brief aside on the anguish of writing, which we all experience. It's not that writing is difficult; the hard part is getting started, or rather, carrying on after a few attempts to piece together scattered texts and distant theories. No matter how much one reads, how many conversations one has, or how many outlines one tries, beginnings are always difficult. But let's imagine that one actually manages to get started. At first, the process goes well, as we have a few ideas and have just read a lot of material that gives us clues to follow. The worst part is when the clues run out, or we are so enthralled with copying the lessons we've learnt that we can no longer think for ourselves, nor find reasons why anyone would want to read something that others—or chatbots—have already written so well, or what ideas we might have that others haven't already expressed beautifully. And the writing fizzles out. And when that happens, either we keep making excuses to put it off (a break of more than three months is a sign that picking it up again is impossible), or we force ourselves to write. And when we start writing and no inspiration comes, a good solution is to look at the definitions. Definitions of concepts allow us to compare versions, contrast viewpoints and quote key authors on the subject. They also allow us to follow a chronological perspective, which traces the evolution of concepts, or an approach based on schools of thought, which is also relatively easy to outline. However, if we want to be more radical and are confident in the subject matter, then we can try to do as the more experienced writers do, which is to write a text from start to finish and then go and look for references that support and complement what has been written. Some call this 'emergent writing', as it structures itself as one progresses, almost without the writer making any special effort in that direction.

Structure and the Problem

With few variations between formats, an article comprises the Title, Author(s), Abstract, Introduction, Method, Results and Discussion. The Introduction begins with the reasons justifying the chosen topic. Let's look at some recommendations:

Title: Clear, objective and representative of the content. It may be simple or compound (with ':' or '–' between the parts) and should not exceed 15 words. Do not forget that the title is the main attraction for potential readers

Author(s): Identification of the researchers and their affiliations. May include an email address for correspondence

Abstract: A concise summary of the objective, methodology, main results and conclusion (generally up to 300 words)

Keywords: Technical terms that make it easier for the article to be found in keyword searches.

Introduction: Provides context for the topic and justifies the research objective

Literature Review: A review of the existing literature on the subject, concluding with the definition of the problem and the formulation of the respective hypothesis(es).

In non-experimental studies is often preferable speak of propositions instead of hypothesis

Methodology: A detailed description of how the study was conducted, enabling its replication, namely:

Subjects: Everything regarding the definition of the sample, the method of selection and the characteristics of the population to which it belongs

Procedure: How the instrument(s) were applied. Software used in calculations and qualitative studies

Instrument(s): Construction, adaptation and rationale for the instrument(s) used

Results: Clear presentation of the data obtained, which fit the defined hypothesis(es), using tables, figures and graphs, without interpretation or personal opinions.

Discussion: Analysis and interpretation of the results, comparing them with the theoretical framework already outlined in the literature review, and indication of the study's limitations.

Conclusion (Final Remarks): Addressing the research objective, summarising the results and suggesting avenues for future research.

References: List of sources cited in the text, following technical guidelines.

Optional and Supplementary Elements:

Acknowledgements: Recognition of institutions or individuals who provided assistance.

Appendices/Annexes: Additional documents that illustrate or substantiate the study.

Continuation and "Finishing Touches"

When the writing is well advanced, with all sections more than halfway to their final length, what has taken place is an exercise in discipline, carried out continuously, with hardly a full day passing without adding something, even if it was only to the Method or Results sections, which should be written at the same time as the literature review. It is time to review the text, adapting it to the report format, as what is being written is a text to prove a specific thesis, not a literary or journalistic piece, with verbs in the present tense and football-style commentaries. It is an exercise in organising one's reasoning in formal language, and must contain the appropriate terminology, facts, ideas and concepts necessary for the argument, expressed clearly and coherently, using as few words as possible, in short sentences.

Now is the time to do some more reading and to start refining the text, so as to follow some very simple rules, which will facilitate further development, namely:

Do not 'over-rely' on authors, i.e., do not present entire paragraphs based on a single reference, as this gives the impression that you are transcribing notes taken from a single source as you read, unless you are describing studies carried out and results achieved;

Do not overdo the references, avoiding long lists of authors to support claims, simply to give the impression that you have read a great deal. The length of the references should be between 5% and 10% of the total length of the work, and what best convinces examiners is that the main authors (those who are consistently cited by various sources) are included, and that it is clear the texts have actually been read;

Avoid systematically ending paragraphs with a reference, as this undermines the idea, making it seem like a personal opinion to which a reference has been added that may not even relate to what has been written;

Do not write entire paragraphs without a single reference, nor cite the same reference more than twice on the same page, or four times throughout the literature review, unless it concerns a study of a specific monographic model;

Vary the verb used to introduce references, using expressions such as: "…as noted…"; "mentioned by…"; "…state that…";

Avoid placing references in brackets in trivial statements (e.g., "… innovation is important for companies [Gerard, 2010]");

Do not make statements that require proof without providing the relevant reference (e.g., "most authors consider…"; "the subject has been little studied…"). Do not forget that, at no point in the literature review, should your own opinions on the subject be

expressed by any means other than through reference to sources. During the final discussion, there will be ample opportunity to express views based on the research and even to speculate, if necessary;

Pay attention to the simple principles regarding how to cite sources without authorisation (whether integrated into or highlighted in the text), how to write numbers and formulas (e.g., numbers under ten should be written out in full), and how to emphasise text (use of italics, quotation marks and capital letters, not bold). Avoid systematic transcriptions, secondary references (xxx, cited by xxx) and footnotes. Do not use articles or verb forms associated with 'I' or 'we', preferring reflexive forms (e.g., 'was found' is preferable to 'we found', especially if referring to a single author).

Once the text has been written and the research completed, it is time to draft or finalise the introduction to the literature review, give the work a definitive title and begin the difficult but exciting task of finalising what has been written and, above all, of making the text 'coherent', i. e., to ensure the coherence of the entire work and to define the problem and hypotheses accordingly, eliminating everything that does not fit within them (e.g., results based on socio-demographic variables not included in the research).

Do not forget that it is only when one has a complete grasp of a subject that one is in a position to define the true research problem (question) and the corresponding thesis (hypothesis of a solution). In fact, it is when we finish a piece of work that we would be in the best position to start it again, but we must hand it in and begin others.

Finally, when everything seems ready, do not forget that there is still much to do before it is finished: you must write the table of contents, dedications and acknowledgements; you must design the cover, organise the appendices and review the entire text for errors, typos, grammatical inconsistencies and, above all, the immense task (for those who did not prepare from the outset) of formatting text, titles, graphs and tables in accordance with the standards; the references must be checked several times, detecting omissions, duplicates and incorrect wording, paying attention to details that are sometimes minute but which immediately catch the examiners' eye (there are 60 pages in the APA Manual devoted solely to the formatting of references); finally, all 'literary' traces must be eliminated, such as the use of the first person, the passive voice and the present indicative, as well as an excess of adjectives. And when everything finally seems ready, resist the temptation to submit it straight away; let the text 'rest' for a few days, ask someone to read it (or read it aloud), submit it to AI reviews, and make the final corrections.

A final word on the abstract, which is always subject to changes and revisions, as it is something that everyone who comes into contact with the work reads (sometimes it is the only thing they read) and which reveals, in a space ranging from a page and a half for an executive summary to a mere 150 words for an article's abstract, everything of relevance that the work contains, starting with the original contribution to the advancement of science. It is the title, first, and then the abstract, that will determine the likelihood of others finding the work interesting to read it when available in a database.

Endnote

From all that has been stated here, it should be borne in mind that this is a personal and somewhat paternalistic view of how to conduct research and write, without definitions or discussions of the existing types of literature review, which, in the end, always turn out to be of the systematic (exhaustive) type, let alone literature meta-analyses, which employ statistical techniques or even more sophisticated methods (e.g., Thinknowlogy; CASP matrices – Critical Appraisal Skills Programme). Similarly, the text is aimed at research students with limited experience of research and writing scientific texts, who intend to write for an informed audience but who may not be familiar with certain concepts and terminology. It is not intended for the drafting of articles intended to pass peer reviews, particularly in English, as writing for publication requires specific training and contact with experienced researchers. Finally, and with full awareness, a more pragmatic than in-depth perspective has been adopted, one that recognises that content is sometimes less important than form, and that concern for keeping sources up to date (five to ten years), in a not overly in-depth approach, is far less important than extensive mastery of the subject, which would entail reading the classics.

With regard to the approval of the text, if any of the authors cited are examiners or reviewers, they will be pleased to see their name appear in the references. For, as mentioned in the introduction to this text, it is the observer who determines whether or not we have done a good job, and so a helping hand is always welcome. On the other hand, the worst help we can give ourselves is to transcribe parts of other texts without identifying them as such, as this is something an experienced examiner detects immediately and can verify online. Or, worse still, by having a ChatGPT-type chatbot write parts of the text, as AI often 'lies', particularly in scientific texts and references, but is perfectly capable of detecting copied sections. At that point, everything written loses all value, because trust is lost. The scientific community expresses itself through knowledge and thought, and plagiarism is the denial of the need to possess one's own knowledge or thought; it is therefore considered the

worst of crimes, with no possibility of appeal or repentance.

This issue is so important that the 7th Edition of the APA Manual devotes extensive discussion to it, beginning with self-plagiarism, prohibiting the authors from repeating themselves without identifying such repetition as a quotation, even if they alter only a few words. With the tools available to reviewers and editors, it is very easy to determine whether a given text contains copied material from other published texts and, if so, the author may well decide not to submit any further work to that particular journal; indeed, following more than two rejections for plagiarism, they may even give up on publishing in reputable journals, as they will have been placed on the 'blacklist'. Honestly, it's not worth the risk. What is worth it is using AI as a platform to go further and faster than with traditional methods. That is the challenge of the future!

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