

Information can be found in many different types of sources and different sources are suitable for different purposes. If you want to quickly find out facts about a subject that you don't know anything about, Wikipedia and other encyclopedia are useful. For students who want to learn a new subject, a textbook is a good option. However, not all sources contain reliable information. These questions can help you to evaluate whether the information is reliable:

- Who has produced the information? Is any person or organization stated as being responsible for the information? If so, do you know anything about the person or organization? Does the person or organization have knowledge about this field?
- What is the purpose of the information? Is the purpose to inform, convince, or market something?
- When was the information published or updated? Is the information still up to date?
- Was the information reviewed before it was published?
- Are there sources and references? Are these sources up to date and relevant?

1. What is a Scientific Article?

A scientific article is an article that presents research findings written by researchers and scientists. The article is published in a scientific journal and thereby becomes accessible for other researchers and interested parties. Within the field of biology, scientific articles are the most important way of publishing research. Scientific journals have an editorial office that decides which of the articles they receive are to be published.

Scientific articles are the 'storehouses' of scientific researches results plus the procedures used to make those researches. They are written to provide a means for scientists to communicate each other about the results of their researches. To make the communication effective, the media (manuscripts) must have a standardized framework so that the authors could present their findings and ideas in an orderly, logical manner. This paper introduces the generic structure of scientific articles written based on actual and relevant studies.

Scientific articles are characterized by a formal, objective style of writing. The research process must be described so clearly that other researchers can follow how the researcher has gone about his/her work. The researcher states clearly, whenever reference is made to other people's work.

2. Types of articles

2.1. Peer-Reviewed Articles

- Are written by scholars and researchers (look for a university or laboratory affiliation in the article).
- Include an abstract and a bibliography or cited list of references.
- Have a specialized format (this will be discussed later under “Dissecting an Article”)
- Use discipline-specific language.

2.2. Popular/News Articles

- Are written by journalists or writers who may or may not have expertise on the article’s subject.
- Rarely have an abstract or bibliography.
- Do not follow a specialized format.
- Use language understandable by the public.
- Undergo a limited editorial review.

While popular magazines can be a good source for general information on topics, they may not be the most appropriate source for your research.

Before exploring the scientific article structure in detail, it is important to note that based on their contents, scientific articles are differentiated into two types:

- **Full research papers (original)**, which are written based on actual and relevant studies.
- **Conceptual papers (review)**, which do not present new data from fresh research but rather selectively discuss and compare the findings of other scientists (through library study) in order to advance thinking in the area of interest.

2.3. How many types of research articles in biology field?

A research article is divided into six types of papers suited to the difference of problems and methods (each item regarded as a publication).

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|---------------------|------------------------------|
| 1. Review article | 4. Book review |
| 2. Original Article | 5. Conference abstract |
| 3. Book chapter | 6. Short communications/note |

1. Review article

The importance of review articles in sciences is increasing day by day. A review article surveys and summarizes priory published papers, rather than reporting new facts or investigation by primary data or empirical study. Review articles are, sometimes, called **survey** or **overview articles**.

The central and fundamental reason to writing a review item is to build a readable synthesis of the best resources available in the literature. Although the idea of writing a review is attractive, it is essential to employ time identifying the research questions. Good survey techniques are critical because they provide an unbiased point of view for the reader regarding the existing literature. Review articles are divided into two categories as **narrative**, and **systematic** reviews.

Author should review 30-150 research papers to the preparation a review article a good systematic review need to more articles up to 150. whereas narrative one demands to overview 30-40 papers. 5,000 to 8,000 words are enough narrative and 6,000 to 12,000 words are good for systematic article.

2. Original article

An original research article is an elaborate arrangement of study work written by the scientists based on primary resources. The original article is the valued most scientific work that offers the most valuable sources of academic literature. Some mentors may refer to these as **scientific research papers** or as **empirical research**. Empirical research project starting in or based on observation or experience research; capable of being examined or disproved by observation or experiment. Data derived from laboratory experiment or field interview with interview schedule or survey questionnaire.

3. Book chapter

Some writer is passionate to write a book chapter, which is as if a review paper usually needs to be an invitation from editor. The book editor will select the writing topic and approach desired. An author can write a book chapter of his own that may offer funs, but he has to sell his ideas to the editor. Research institutions or universities and publishing houses publish books inviting chapters from authors.

- Interesting book Chapter requires:
- A book may be between 5 and 20 chapters; but it is reasonable to be 10-chapter book.
- A single idea for a book.
- Eye-catching, concise, and understandable title.
- Around 4,000 words to be average for good book chapter; but it should be included all information as reader's desire.
- Good book is a complete guideline to scientists whereas a single article offers a specific issue.

4. Conference abstract

Conference abstract represents a critical skill to write for young researchers. It is a summarization of a full paper by which one has to take part in a conference being accepted for presentation as this is seizing invited at first. The audience and organizer justify the full study only by reviewing the abstract. Hence, it is critically significant to be clear, focused, and inclusive. It needs writing followed by some skillful techniques or formulas. The conference abstract should be between 300 and 500 words in a single paragraph.

5. Book review

A book review obtains the brief report of a book that satisfies researchers or students extracting the key information or concepts from at a glance. The extracted information may help somebody to read the whole book or not. Mainly popular, best-selling, or academic reference work needs to be a good review. Such type of report represents short writing of fewer than 1,000 words comprising 4-7 small paragraphs.

6. Short note

Short note is such type of review article that fill the gap of recently published original one. Most of the original articles place one or two further research questions at the end, which is addressed by short note. Furthermore, limitations or the gaps of findings of a research paper are filled up in short note. It is composed of less than 3,000 words in 3-7 pages.

3. Structure of Scientific Articles

All scientific articles have general parts, which follow a set of conventions that have developed over the years from 1665, when the first issue of Philosophical Transactions appeared in England. The inclusion of general parts in scientific articles makes scientific papers have a uniform or rigid format. Scientific papers have a stereotyped format, i.e. **(1) Abstract;**

(2) Introduction; (3) Materials and Methods; (4) Results; (5) Discussion; (6) Conclusion; and (7) References (AIMReDCaR).

The use of AIMReDCaR format makes scientific articles' structure rigid, and there are two reasons for this. First, scientific articles are intended to facilitate a communication of scientific findings in the community of scientists. To assure the communication occurs efficiently, the media (manuscripts) must be standardized.

Second, this format allows the paper to be read at several different levels. For those who merely want to find out what information is available on a subject, they may just skim the Titles and Abstracts. Those who need to go deeper may look at the Tables and Figures in the Results, and so on. In short, the scientific format helps to insure that a reader knows what to expect and where to find specific types of information.

