

The Scientific Paper

Once scientists arrive at conclusions, they need to communicate their findings to others. In most cases, scientists report the results of their research activities in scientific journals in a rather standard scientific paper format. A **SCIENTIFIC PAPER** usually includes the following parts: a Title, an Abstract, an Introduction, Materials and Methods, a Discussion, a Conclusion, and References. This paper is written for submission to a journal for publication; or, the abstract itself may be submitted to a society/club/organization in order for approval to present data personally to peers/colleagues.

Components of Scientific Paper

1. **Abstract:** The abstract summarizes the question being investigated in the paper, the methods used in the experiment, the results, and the conclusion drawn. The reader should be able to determine the major topics in the paper without reading the entire paper. Usually written after paper is completed.
2. **Introduction:** Here you introduce the problems and questions you addressed in conducting your experiment (i.e., why did you do it?). Again, you must make a statement, which encompasses your hypothesis. You may also want to state the question(s) you are trying to answer. Address previous experimental results that preceded your work.
3. **Materials:** As in a Protocol, list all major items used to carry out your experiment. How did you set up your experiment? How many experimental groups did you have? How did you measure the effect you studied? These and any other methods should be explicitly stated or referenced. Again, anything that is different from previously published methods should be explicitly stated.
4. **Results:** Here is where you show the data that you collected. Results are usually shown in tables or graphs (figures). All Figures that are presented must have a caption or a title placed above it that describes its contents. Tables and Figures are numbered consecutively throughout a lab report or scientific paper. The title should give enough information to allow the table to be understandable apart from the text. You should also write a brief statement about the trends you see in your results.
5. **Discussion:** For write-ups, this section is of major importance. You should critically examine your results and interpret the trends in the data. Do your results support your hypothesis? Were your questions answered? What new questions come to mind after examining the results?
6. **References:** Include published works that you cite in your write-up. Use the standard format given in **Scientific Writing**.