

Scientific Writing Guidelines – Adapted from Dr. Sarah Gerken, UAA

There are many sites at different colleges and universities devoted to scientific writing, so please take the opportunity to visit them. People devote their entire careers to teaching scientific writing, thus they will be of much more help than this brief guide will.

Abstract

The point of an abstract is to let the reader know, very concisely, what you did, why you did it, what happened, and what it means. Each of these questions is answered in a section of your paper, and the abstract should summarize each section in a single sentence.

Body of paper

Introduction = Why you did this

Materials and methods = What you did

Results = What happened

Discussion = What it means

Introduction

The introduction defines the question and contains background, which can include summarizing (BRIEFLY) previous work, and information that is relevant to the question. In addition, the author is making a case for why this is an interesting question to ask. Has work on this question been attempted before, has anyone done related research. The introduction would also be the place to state the hypotheses.

Materials and Methods

In this section, describe what you did and how it was done. Include enough detail that someone who was not there could repeat your analysis or experiment. In addition, it is appropriate to describe why a particular procedure was chosen. You don't need to describe common analytical techniques, although if you created a novel technique you need to describe it in detail. If you changed your methods during the analysis or experiment, describe the change and why it was made.

For example: In order to simulate rainfall, water was applied by spraying the leaves of the plants XX number of times with a mister, on alternate days. Normal rainfall was simulated by using water of pH 5.5 on the control plants, and acid rain was simulated by using water of pH 3 on the experimental plants. On day 5 of the experiment, it was observed that both experimental and control plants were wilting and their soil was dry. Treatments were increased to XX sprays per plant, in order to provide enough moisture for the plants to survive.

Results

The results section summarizes what happened in your analysis or experiment. If you can graph it, you probably should. If data are better presented in tabular format, they should be. This is an information intensive section, and should only

include YOUR information, not anyone else's. Do not interpret, do not hypothesize, only report what you found.

For example: The acid rain treated clover plants were 20% shorter and had three fewer leaves than the control clover plants.

Discussion (or Conclusions)

The discussion section is where you interpret your results, discuss what happened, why it might have happened, and broader general relevance. You want to be logical about how you interpret your results; this is not a creative writing exercise. Suggesting future avenues of research or ways in which your analysis or experiment could have been improved also belong in the discussion section.

For example: Both the experimental and control plants died, possibly due to under-watering, as the soil seemed very dry throughout the experiment. For future experiments, it may be useful to water the soil directly in addition to spraying the leaves, to ensure water gets to the roots of the plant.

Discussion and Conclusions can also be separate sections, in which case the discussion covers the relationship of your results to previous work and previous ideas (whether you agree or disagree with previous work), and the conclusion is a concise statement that summarizes the paper.