



Writing Methodology

Martyn Shuttleworth 438.9K reads

Outlining your methodology lies at the core of your paper, and fulfills one of the basic principles underlying the scientific method.

Any scientific paper needs to be verifiable by other researchers, so that they can review the results by replicating the experiment themselves and testing the validity.

To encourage this, you need to give a completely accurate description of the equipment and the techniques used for gathering the data.

Finally, you must provide an explanation of how the raw data was compiled and analyzed.

Writing Methodology Allows Verification

In science, you are (hopefully) never presenting a personal opinion or arguing for preconceived biases. The value of your work rests squarely on how well it conforms to the principles of the scientific method. Other scientists are not going to take your word for it; they need to be able to evaluate firsthand whether your methodology is sound.

In addition, it is useful for the reader to understand how you obtained your data, because it allows them to evaluate the quality of the results.

For example, if you were trying to obtain data about shopping preferences, you will obtain different results from a multiple-choice questionnaire than from a series of open interviews.

Laying out your methodology allows the reader to make their own decision about the validity of the data and understand how this may have produced the results it did.

If the research about shopping preferences were built on a single case study, it would have little external validity. The reader would rightly see these results very differently from those of a study with a more vigorous experimental design and thousands of participants.

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The Structure Behind Your Paper

Whilst there are slight variations according to the exact type of research, the methodology can usually be divided into a few sections.

- Describe the materials and equipment used in the research.
- Explain how the samples were gathered, any randomization techniques and how the samples were prepared.
- Explain how the measurements [1] were made and what calculations were performed upon the raw data.
- Describe the statistical techniques used on the data.

This is the very basic structure behind your methodology, and lays out the most important aspects of how you actually carried out your research.

The writing for the method should be clear and concise. The major point is not to stray off into giving background info, interpretation, or irrelevant detail. Write from your reader's perspective. You won't need to explain things they already know, but you will need to paint a precise picture of your methods.

For example, in a psychology paper, there is no need to describe a Skinner box, as it's design is well known to psychologists. However, you would need to explain exactly how the box was used, to allow exact replication. You would also note any area where you deviated from what your readers will expect. If you used a Skinner box but one broke midway through your experiment, you'll need to explain this clearly. Likewise you'll need to explain any modifications or variations you made to what you initially set out to do.

Whilst not always possible, the methodology should be written in chronological order, always using the past tense.

Writing Methodology at the Core of the Research Paper

A well laid out and logical methodology section will provide a solid backbone for the entire

research paper, and will lead to a strong results section.

The only real difficulty with the methods section is finding the balance between keeping the section short, whilst including all the relevant information.

The other problem is finding the correct style of writing ^[2]: APA guidelines suggest that you should use 'I' and 'We', but most supervisors still prefer an impersonal passive tense. Check this with your supervisor before you start writing, to avoid unnecessary editing!

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Links

[1] <https://explorable.com/scientific-measurements>

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