

## Careful Research Planning Facilitates Writing

One of the toughest jobs in technical writing is reporting the results of poorly planned experiments. Researchers who have trouble writing may not be poor writers; instead, they may not have planned their research so it was easy to write about.

Effective, productive researchers are never short of questions to answer and stimulating problems to solve. Conducting experiments that these situations inspire is stimulating and fun; preparing detailed plans is not. Consequently, experiments are often started before thorough research plans have been completed.

An ambitious investigator may conduct a series of experiments, with each new experiment evolving from the results of the one before. Without a thorough plan that foresees the end from the beginning, such investigations may comprise sound experiments, but the total research may not be sound. The data generated may be uncoordinated, inconsistent, and incomplete. Writing a paper from such data can be difficult.

Approximately 30% of the papers submitted to WEED SCIENCE and WEED TECHNOLOGY are rejected. Reports of research that has been carefully and thoroughly planned, and then properly conducted should not have to be rejected.

The journal in which the research will be reported should be included in a research plan. The author must understand the standards of the proposed journal, and be sure that the experimental, statistical, and writing plans satisfy those standards.

Besides a complete list of the variable treatments to be evaluated, the conditions under which the experiment is to be conducted, and the parameters to be measured, an experimental plan should include the following:

1. The number of times experiments will be repeated and the time when the proposed research will be finished.
2. The time when a draft of the manuscript will be completed;
3. Tables and figures in which the data will be presented, complete with titles, identification of lines and axes of graphs, and complete column heads and stubs of tables;
4. Plans for statistical analyses of the data;
5. A thorough review of pertinent literature.

Strict planning of research does not stifle freedom of inquiry. The creative and innovative scientist must always be free to spend some of his time (perhaps no more than 15%) to probe, to explore, and to test spur-of-the-moment ideas. The results of such exploratory experiments are seldom published, even when they reveal important new insights. Instead, studies specifically designed to confirm the new insight and develop new knowledge can be planned and conducted to yield sound data suitable for publication and easy to write about.

Item 3 in the above list is especially important. Having outlined appropriate tables and figures when the research was being planned helps tremendously when writing the final paper. One of the greatest benefits of this added effort is that it can reveal any significant gaps in the body of treatments to be evaluated or in the parameters to be measured. The author can avoid the unpleasant and difficult task of having to explain his way around missing pieces of the total picture. A complete, thorough, and logical set of data is easy to write about.

Remember:

Preparing a thorough research plan  
May not be exciting;  
You'll know the effort was worthwhile  
When it helps you with your writing.



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