

Paper Outline/Guidelines (Brief)

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Abstract

The main purpose of a publishable paper is to demonstrate that the author:

- has studied and knows *the current status of comparable work*
- has understood some *current limitations of the comparable work*
- makes an *original contribution* (relative to the comparable work)

1 Introduction: Problem/Question Area

Readers want to know what larger concern exists in the world that is still not solved or answered.

Therefore, briefly describe some larger concern that people have – and then indicate some aspect of this concern that still needs to be solved (or question that needs to be answered).

This section answers the question: *what is the problem/question area where this paper proposes to make a contribution to knowledge?*

2 Survey: State of the Art

The previous section ended by identifying a large question that is important to answer – or problem that is important to solve.

Now the readers want to know how much progress *other people* have made on answering the question or solving the problem. In other words, readers want to have a fairly clear idea about the *current state of the art* (“what has already been done”) as they read a paper.

Therefore, describe briefly the major attempts to address the problem area described in the Introduction – and their current status.

This section answers the question: *what are the major types of research work that has been conducted to try and answer the major question or solve the major problem introduced in previous section – and what is the status of that relevant work?*

3 Research Problem/Question

Now that readers understand what kind of work is being done in the problem area, they want to know what kind of contribution you are making to the current effort. In particular, you are expected to identify a) some aspect of the existing research that requires more work, and b) what you plan to do about it.

Therefore:

¹If your research focus involves the development of *a new method*, be careful not to confuse this “method” (i.e., the *result* of your research) with the *method(s)* you need to use to determine the effectiveness of the method you create.

1. Tell readers *what* (not *how*) you intend to contribute
2. Show that it is not yet done by anyone else (by reference to the work you described in the Survey)
3. Convince the reader that your particular contribution will be important to the overall work on the problem

It is very good practice for this section of the thesis to include a sentence of the following form:

“The main contribution of this paper is that it will increase our KNOWLEDGE about [something].”

This section answers the question: *what is the author’s proposal for an original contribution of KNOWLEDGE to the current work on the larger problem/question area?*

4 Method

Readers now want to know *how* the author intends to make the proposed contribution – and they want to trust the author’s choice and execution of this *how*.¹

Therefore:

1. Provide readers with a brief *summary* of the protocol (“what recipe you will use”) you plan to follow to get and evaluate your results
2. Provide readers with a brief statement of how you motivate the choice of method

This section answers the question: *what was the protocol – and why?*

5 Research

Readers now want to know about the *actual research* done. This includes:

- (possibly) a description of any system(s) built
- description of tests/studies (of the system, of people, etc.)
- description and discussion of results/findings of the studies
- analysis of the results

This section is the bulk of the thesis document – both in terms of size and in terms of importance. This section answers the question: *what was learned?*

5.1 System Description

Readers now want to know if anything will actually be built as part of the research. That is, if the research involves knowledge about the *creation* of a new technical solution, a new design, or the like, the actual steps to build that thing are described here. (But if the main focus of the study is to, say, gain knowledge about people's *reactions* to some materials or technologies, then *how they are created* is probably less important and they would be described in the next section.) And if it will be built, professionals in the field want enough details about the implementation to be able to replicate it if necessary.

Therefore:

1. Provide readers with a description of the system
2. Make sure there is enough detail for a professional to be able to create an equivalent implementation

This section answers the question: *what, if anything, was built in order to test the hypothesis or solve the problem?*

5.2 Test/Study: Description

Readers now want to know what will be done to test a hypothesis, evaluate the performance of something built, or otherwise arrive at some justification for a claim about increased knowledge.

Therefore:

1. Provide readers with a description of all materials used during the study
2. Provide readers with a description of the study/test protocols, techniques, and the like
3. Be sure to include information about *how* different study/test choices were made (number and type of end-users, design and administration of questionnaires, etc.)
4. Make sure there is enough detail for a professional to be able to recreate a similar study/test

This section answers the question: *how was the test/study designed and executed?*

5.3 Test/Study: Results or Findings

Having read the details of the study/test, the reader now wants to know what actually happened during the *actual* study/testing. Therefore, provide a description of “what happened.”

Note: up until this point in the document, *everything else* is a description of what “anyone else could do.” In this sense, it is like a recipe: someone else could choose a similar recipe for similar reasons. However, starting with this section, there is the potential for *differences*: other researchers could follow the same method but arrive at different results – or even perhaps have different interpretations of the results.

This section answers the question: *what happened during the specific studies/tests?*

5.4 Test/Study: Analysis & Evaluation

Now that readers know “what protocol was followed” & “what happened” – they are very interested in “what it all means.” What is the *significance* of the results?

Therefore, provide an *analysis* and *interpretation* of the results. (Note: for many kinds of qualitative studies, this section may be inter-woven with the previous one.)

This section answers the question: *what do the results of the study/tests mean?*

6 Conclusion & Discussion

Now that readers know the details of the work, they would like a summary that puts the results and insights into the context of other work on the problem or question. Therefore, authors should highlight:

- The major contribution(s) to work on the problem area
- Significant remaining questions/problems for Future Research

Note: this is where authors *deliver* on the promise of the thesis.

This section answers the question: *what are the major insights? and what is left to be done?*