

# STEPS TO WRITING A RESEARCH PAPER

## 1. Determine the topic

When designing a research project, we recommend preparing an initial list of ideas and topics. Such a list should be based on established guidelines and should make the research question and thesis clear.

## 2. Secure a Mentor

It is time to secure a mentor/advisor/teacher to oversee your Extended Essay. Create an acceptable work schedule to be followed throughout the writing process.

## 3. Outline the paper

An outline is like a road map. An outline details how you will get from here to there, and helps ensure that you take the most direct and logical route. *Do not start writing without it!*

## 4. Plan Research Approach

Determine best location to find materials needed. Secure a location if required. Establish an acceptable working schedule.

## 5. Start writing before the experimentations are complete (Science Papers)

Starting writing while you are still doing the experiments. Writing often evokes new ideas: you may realize that there are additional experiments to run or additional controls that you need to add. If you wait until you are done in the lab, have dismantled the equipment, and possibly moved on to another position, you will not have the opportunity to test these ideas.

## 6. Begin Research

This may include reading the central work, constructing a working bibliography or gathering data. Your research mater should be organized and easy to access.

## 7. Determine the basic format

There are three basic formats for Extended Essay papers:

***Full-length Research Science Reports:*** These reports contain a comprehensive investigation of the subject matter and are viewed as the standard format. It uses the “IMRAD” format – Introduction, Methods, Results, and Discussion. Their length will be set by IBO and are usually 3500-4000 words or less.

***Formal Essay:*** A full-length research paper, these papers can also make a significant contribution to the literature of the subject matter. Their length will be set by IBO and are usually 3500-4000 words or less.

**Artistic Creation Assessments:** These compositions require the creation of original work by the student in the fields of Music or Fine Arts. These reports usually have immediate implications on existing research and material.

## 8. Things to Consider

There are several factors to consider when writing an Extended Essay.

**Language:** English has become the dominant form for the International Baccalaureate Program. Therefore, grammar, spelling and syntax are all relevant.

**Focus:** Is its focus broad or narrow? Which disciplines are represented? What is the orientation – for example, is it clinical or basic, theoretical or applied?

**Format:** All papers in the same subject area must be formatted in a similar manner. Coordination must be established department by department.

**Figures, Graphs & Charts:** Do figures aid in the understanding of your topic?

**Time to Print:** Submission dates must be clearly established. These permits time for evaluation and assessment within the home school before shipping off site, for final evaluation by IBO.

## 9. Argument Assessment

Do your arguments support your thesis and answer your research question? As you think about your paper, store relevant research material in an effective manner. This will save time and avoid frustration when the writing begins. Stored items might include figures, references, and ideas.

## 10. Write the first draft

Write the first draft of the entire manuscript. Some people recommend that you begin your writing with the Introduction and continue through in order each section of the paper. This can help ensure flow. However, others suggest that you start wherever you wish – anything to get rid of that blank screen or piece of paper. What ever your approach, heed the advice of Charles Sides (1991): “If you try to write and edit at the same time, you will do neither well.” Since editing is often a lot easier than writing, push through this step as quickly as possible. If you are taking much more than a week, you have probably paused to edit!

## 11. Get feedback on your Extended Essay and revise your manuscript

Getting feedback is one of the most important things that you can do to improve your paper. Indicate to what levels of information you would like (e.g., comments on the content, logic, language, and/or style). After you get their comments, revise your

manuscript to address their concerns.

## **12. Deal with Mentors' comments**

Most Extended Essays are not accepted on the first submission. However, you may well be invited to resubmit a revised version.

## **13. Consider the Need for Additional Research or Experimentation**

Most Extended Essays will require follow-up research to resolve unclear information or data. Clarity is critical at this stage.

## **14. Revise your Extended Essay**

This step involves three major tasks, each to be carried out in the order given:

*(1) Make major alterations:* Fill in gaps, correct flaws in logic, restructure the document to present the material in the most logical order.

*(2) Polish the style:* Refine the text, and then correct grammar and spelling.

*(3) Format the document:* Make your manuscript attractive and easy to read

It is important to do the tasks in the stated order. Otherwise, you may find yourself spending a lot of time revising material that you later delete. Structure is worth 24 of the 36 points in the Extended Essay.

## **15. Check the references**

Ensure that the citations are correct and complete. Complete one last literature search to make certain that you are up to date. Format of all references should have been previously established by each department within your school.

## **16. Construct the tables, figures, and legends (Optional)**

The entire paper should be organized around the information/data you will present. By preparing the tables, figures (and their legends and appropriate statistical analyses), you will be certain of your results before you worry too much about their interpretation. You also may be able to determine if you have all the data you need.

**WARNING:** if you choose to include tables, figures or charts of any kind they can be located within the body of the paper in Art, Music and Science Extended Essays. However, for all other subject areas these items should be located in the Appendix of the Extended Essay and does not count in the total word count of the paper. Furthermore, the markers of the Extended Essay are not required to consult these documents unless the writer has made a minimum of three direct references to the specified item.

## **17. Draft a title, table of content & abstract**

Drafting a working title, table of content and an abstract helps define the contents of the paper, identifying the relevant aspects of the paper.

## **18. Write the final title and abstract**

Many changes are made during the editing process. Make certain that your title and abstract match the final version of your article.

## **19. Check the proofs**

Once the work is approved by your Mentor and prepared for submission, carefully correct any remaining typos, structural irregularities or factual errors. And read the work for clarity – this is your last chance!

## **20. Celebrate!**

Enjoy the moment!

### **SELECTED BIBLIOGRAPHY**

Council of Biology Editors, Committee on Graduate Training in Scientific Writing (1968) *Scientific Writing for Graduate Students: A Manual on the Teaching of Scientific Writing*. New York: Rockefeller University Press. (This was subsequently revised, see Woodford below.)

Day RA (1998) *How to Write and Publish a Scientific Paper, 5th Edition*. Phoenix: Oryx Press.

Fischer, BA, Zigmond, MJ (2004) *Components of a Research Article*. [www.survival.pitt.edu](http://www.survival.pitt.edu).

Institute for Scientific Information. [www.isinet.com](http://www.isinet.com)

Sides C (1991) *How to Write and Present Technical Information*. USA: Oryx Press.

Woodford FP (1999) *How to Teach Scientific Communication*. Reston, VA: Council of Biology Editors.