Science Fair Technical Paper Essay Guide

Name

Academy of Science and Technology

Special Topics in Science

Teacher

Due Date

Science Fair Technical Paper Essay Guide

The technical paper is the final step to all science fair papers. It may not be required by a fair, but it is a good way to end a science fair project's journey. The technical paper's goal is to sum up all your research into a single document that will likely be around 15-30 pages without including SDS sheets. Even though this paper is not typically required by science fairs, I would recommend having it the day of your presentation as it shows that you are more of a professional and can put you over the top of the rest of your competition.

Technical Paper Formatting

The technical paper is written in APA formatting similar to the research plan. The first page of the technical paper is your cover sheet including the researcher's name, address, phone number, school, grade level, school address, school telephone number, headmaster/principal, supervising teacher, and title all centered in the middle. The next page is a page with just your title and this is where you start numbering your paper, however, the cover sheet should have a heading already. The next page is your table of contents which should have a centered, bolded heading and have the page numbers of the abstract, introduction, method (and possibly sub-sections of materials and procedures), results, discussion, and references. The next page is the abstract, in which the heading should be bolded and to the left. Next is the introduction, which should have the project title name as the heading, bolded and centered. After the introduction is complete, the method sections start, with a heading bolded and centered. In this section you should have a safety paragpraghs(s), a subheading "Materials" left sided, and a "Procedures" subheading left sided. The next section is results, which should have a heading that is bolded and centtered in the page. After this, the next section is discussion which once again has a heading centered and bolded. The last section is references, which requires a page break

and has a heading that is bolded and centered. You may also have an appendix, which is where more insignificant information may be stored.

Abstract

The abstract is likely one of the last sections that will be written at the end of a project. This section is meant to summarize the findings in a short 250 word summary. This summary should include information from the introduction, methods, results and discussion, however, an emphasis should be put on the results and discussion in this section, with only 2-5 total sentences being directed at the introduction and methods. This section should not incorporate any pictures but should incorporate some type of qualitative data if it is available and an interpretation of this data to serve as the results and discussion sections. The results and discussion parts that you choose should be the most significant results that have the most important impact as the abstract will likely be previewed by judges as multiple fairs.

Introduction

Assuming that the project has remained realtvely similar to the vision when the researcher wrote teh research plan, this section should need little revising and editing. The biggest difference will likely be switching most of the information from future to past tense and possibly revising the paragraph in which you briefly introduce the project.

Method

The first part of this paragraph is once again the safety section. This section, similar to the last section, should be in all past tense. In my opinion, the researcher should list possible safety precautions, without adding any additional ones, as this could cause problems at later fairs.

The second part of this section is the materials. This section may have changed a lot from the research plan depending on the project. In this section, the researcher must list every material that they used in their procedures to complete their experiment. If any materials were used that were not listed in the research plan, they will need to be added. Similarly, if any materials that were listed in the research plan are not used, they will need to be deleted. Each material should still be specified in its amount, quantity, etc.

The last part of this method is the procedure. This section will likely take the majority of the researcher's time to write. The main difference between this section and its counterpart in the research plan is that it will now be in paragraph format rather than a numbered list, it will also be in past tense like the rest of this paper. Once again, this section needs to be extremely detailed and must be an accurate representation of the project so that others may learn from the project. If the project involved 3D printing or any other design feature or anything in which a visual aid could be helpful, a picture or technical drawing could be included with proper APA citations. If any extensive coding is included in the project, it may also be a good idea to incorporate this into the appendix rather than the procedure, but proper APA citations must be used in this situation as well.

Results

In this section will be all the raw data from the project, without no interpetiation of this data. All the graphs and charts will be included, with a note of course, but will not have an interpretation in the section. Every test that was done should be explained along with its purpose in how it assists the project as a whole. Any outliers should be recorded with a possible reasoning included in the note as well. It is also important to note that every table and graph should be mentioned prior to being included in the paper and most tables should be not included

in the results section but rather be included in the appendix section. In this section any chemical formulas or mathematical formulas that were used in the project should be included, typically on its own line. If any averages are calculated, ensure to include error bars in graphs.

Disscussion

This section should begin with a brief recap of the project and its purpose. This paragraph should be able to stand alone and be a summary of mainly the procedures, not including information from the background. After this, the next section should be the interpretation of the results and if the project goal was achieved, with an explanation of why. The limitations of the project should be included, every project has limitations and this project will likely have multiple. It will also be helpful to include extensions and applications of the project and its results near the end, however, the end of the paper should have a short conclusion of what happened in the project.

References

It should be the same as the research plan unless more were added. Follow APA guidelines

Appendix

See APA guidelines.

Example 1: Grade : 4.4

0039Paper_9th_Bio_Formulating a New Agent to Achieve and Advance Continuous Activ…

Example 2: Grade: 4.6

Technical Paper Donovan Burke