GUIDELINES FOR TECHNICAL REPORT PREPARATION FOR UNC AGEP UNDERGRADUATE FELLOWS

The University of North Carolina at Chapel Hill
Alliance for Graduate Education and the Professoriate
Updated March 2008

General Comments

A technical report is a concisely written work summarizing a research project from conception to completion. The guidelines herein are not meant to be comprehensive as each field dictates its own guidelines for scholarly writing. When using the guidelines in this document, refer to the top journals in your field for examples of how tables, figures, and legends should be formatted.

The completed technical report should be less than 15 pages from title page to acknowledgements including tables and figures and consist of the following sections as described in this guide: title page, abstract, introduction, methods, results, discussion, next steps/future work, acknowledgements, and references. The technical report is to be submitted in electronic format to the UNC AGEP Program Manager at the end of each semester after faculty preceptor approval. Faculty preceptor approval should be obtained via a hardcopy form to be provided by the UNC AGEP Program and submitted to the UNC AGEP Program Manager.

It is understood that students in the first semester of their project may not have made enough progress to complete the full technical report. First semester Fellows should focus on understanding relevant literature, what your role is in the project you are working on, and how your work will fit within the framework of the larger research group. The technical report does not need to be completely rewritten each semester, but care should be taken to update sections as necessary.

Required Sections

Title Page

The title page should include a descriptive title of your research project, your name, the name of your supporters, and the month and year of technical report filing. A sample title page can be found at the end of this document.

Abstract

The abstract should stand alone on a single page and give a concise, but complete summary of the research project. The following parts should be included in the abstract in less than three sentences each. An example of each part follows the description of that part and a sample abstract page can be found at the end of this document. Note that abstract examples are completely fictional and do not summarize a real research project.

Background information: This part of the abstract frames the hypothesis and tells why your research is important.

> Graduate and undergraduate students interact on a daily basis in science, technology, engineering, and math (STEM) labs on college campuses across the country, but the level of these interactions has been only cursorily explored.

Hypothesis: This is the research question to be answered. It should be written in the form of a statement that can be tested experimentally.

> To determine the best method to obtain student researcher perceptions of these interactions and to better understand student researcher perceptions of the interactions between graduate and undergraduate student researchers in STEM fields, …

Methods: The materials and methods used to test the hypothesis should be stated briefly.

> …we conducted phone, online, in-person, and written, mail-in surveys of 500 student researchers on the UNC Chapel Hill campus.

Major results: This is a listing of the most important results. Generalizations such as "results will be presented" are not acceptable.

> Our results show that student researchers respond most completely via the online survey format. Using this format, we found that graduate students are eager to help undergraduate students develop in the lab setting, but are not always adequately prepared to do so. We also found that undergraduate students are sometimes hesitant to act independently for fear of making mistakes.

Conclusion: This is a statement of the implications of your research that are supported by your experimental results.

> Our results suggest that graduate student researchers need more training to guide undergraduate students in their research. This may help undergraduate student researchers have more confidence and work more independently.

Introduction

The introduction should summarize the state of knowledge in your field as it applies to the research question you are addressing. Remember to use citations where necessary. See Reference section below for relevant notes about citations.

Methods

This section should include a detailed account of the materials and methods used to complete your research such that another person could replicate your work. This should not be a numbered list of cookbook style instructions. Use subheadings as necessary to explain different techniques or experiments.

Results

This section should include tables or graphed data as well as prose detailing the outcome of experiments. Be sure to number you figures and provide figure captions. Reserve interpreting and drawing conclusions from experimental results for the discussion section unless the results of one experiment are needed to explain the results of the next experiment. Use subheadings as necessary to detail the results of different experiments.

Discussion

This section is generally not broken down by experiment. It should initially remind the reader of the purpose of your work (a restatement of your hypothesis), how it is different from what others have done previously, and concisely restate the major results. Next, experimental conditions should be compared and contrasted (i.e. control group vs experimental group), conclusions should be drawn from the results of individual experiments, and inferences should be made as to the potential implications of your work for your field (or other fields). Particularly interesting or unexpected outcomes should be also detailed here. Finally, the broad significance of your work should be discussed.

Next Steps/Future Work

Most of your projects are a small part of a larger project. Therefore, this section should put your part in perspective as it relates to the larger framework of ongoing research in your group. Additionally, this section provides you the opportunity to think beyond the work you have already completed and begin to plan the future direction of your project. It should include a brief description of the work to be continued and what goals are to be accomplished with that work.

Acknowledgements

Most importantly, include the full name and grant number of the funding source for your work. This information can be obtained from the Program Manager Kathy Wood. Also feel free to thank various members of your lab group and the professor that welcomed you into their group.

References

References should be formatted according to the leading journal in your field. Only references that are cited in text should be included in this list. Refworks and EndNote are two citation organizers that can help with in line citations as well as reference list formatting. For more information on this topic see http://www.lib.unc.edu.

TITLE OF YOUR UNC AGEP UNDERGRADUATE FELLOW TECHNICAL REPORT

Your Name Here
UNC AGEP Undergraduate Fellow

Under the direction of ABC Professor, PhD
Name of the primary department of your faculty preceptor
The University of North Carolina at Chapel Hill

Month, Year

ABSTRACT

Technical Report Title Here
Your Name Here

Graduate and undergraduate students interact on a daily basis in science, technology, engineering, and math (STEM) labs on college campuses across the country, but the level of these interactions has been only cursorily explored. To determine the best method to obtain student researcher perceptions of these interactions and to better understand student researcher perceptions of the interactions between graduate and undergraduate student researchers in STEM fields, we conducted phone, online, in-person, and written, mail-in surveys of 500 student researchers on the UNC Chapel Hill campus. Our results show that student researchers respond most completely via the online survey format. Using this format, we found that graduate students are eager to help undergraduate students develop in the lab setting, but are not always adequately prepared to do so. We also found that undergraduate students are sometimes hesitant to act independently for fear of making mistakes. Our results suggest that graduate student researchers need more training to guide undergraduate students in their research. This may help undergraduate student researchers have more confidence and work more independently.