

A Discussion of Technical Writing in Four Professional Fields

Professor Dave Howland

September 26, 2018

Technical Writing Essentials

Section 1

This paper will discuss the importance of workplace writing as it relates to four professional fields: biostatistics, research psychology, teaching, and supervising. The first three fields are related to my educational background at Rutgers (a Statistics major and Psychology minor), while the last is unrelated but still something I could see myself doing. Before delving into the nuances of writing in the four fields mentioned, let us discuss the scope and importance of workplace writing. Depending on the type of job, written communication can be one of the most important aspects of a workplace environment. Face to face communication is an important skill in almost all jobs, but writing—whether it be emails, letters, memos, or formal documents—can give people much more time and space to communicate their ideas effectively. According to *Technical Communication Strategies for Today*, “surveys regularly show that oral and written communication skills are among the most important in the technical workplace (Johnson-Sheehan 15).” Another survey reported in an Education Week article found that communication skills were rated above problem-solving and analytical skills in the workplace (Sparks). This means that even thorough knowledge of the technical skills used in a career may not be enough to ensure job security. More and more, employers are emphasizing the need for workers who have excellent spoken and written communication skills.

From this we can see how important writing is in the workplace in general, but how much does writing itself and the importance of such writing vary from career to career? One way to understand this is by comparing the writings of an engineer and a teacher. Engineers may write incident reports, project descriptions, spreadsheets, and much more. Teachers tend to write exams, schedules, syllabuses, and emails. These types of documents are vastly different. One might assume writing as an engineer is more important than that of a teacher because of the complexity of writing, but it should be noted that each has a specific purpose and audience and

plays a crucial role in his or her respective work environment. If an engineer does not effectively communicate his or her plans to a coworker, an entire project may fall apart. In the same light, if a school teacher does not do a decent job of explaining an assignment to her students, it may cause a lot of confusion for students and their parents. These are two simple examples, but this concept can be generalized to almost any profession. The types of documents people write vary greatly from career to career, but the importance of such writing is constant.

Biostatistician

A biostatistician may design experiments, collect data from experiments or surveys, and use many statistical tools to analyze data that are in some way related to biology. Simply put, biostatisticians collect and work with data collected on living things. Writing as a biostatistician, or any kind of statistician for that matter, is relatively specific. Most statisticians must report their results to colleagues or to the general public. To communicate their results appropriately, they need to write in a way that is scientifically accurate, while still understandable to a general audience. For example, when reporting findings, it is not helpful for a statistician to simply write out the statistics in words. They may better communicate their ideas by organizing the data in a chart or graph (Vickers). They also may need to explain certain terms that the general public may not understand. For example, when reporting whether a result is statistically significant, it is important that the author explain this phrase in layman's terms. Not everyone understands the term "statistically significant," but most people should understand what it means for an event to be unlikely due to chance.

To learn more about the kinds of writing biostatisticians produce on a daily basis, I interviewed Javier Cabrera, a faculty member at Rutgers who is currently working with biostatistics research (Cabrera). Cabrera works as the Acting Director of the Cardiovascular Institute, a subset of the Robert Wood Johnson Medical School. He also works as a full-time professor at Rutgers University. On any given day, Cabrera will spend his time supervising research projects, participating in and overseeing the completion of projects, writing applications for Institutional Review Board (IRB) approval, writing articles for publication, applying for research grants, and teaching. Technical writing plays a significant role in his daily routine. Cabrera estimated that about 30% of his day consists of formal writing and another 30% is devoted to writing programs for biostatistics. He programs mostly in R and writes a few programs in SAS, C++, and python.

When asked about specific documents he writes frequently, he remarked that he seems to write emails most frequently. One example of the types of emails he writes are emails to colleagues. The audience of these emails is the colleague he is currently collaborating with, and the purpose of these emails is usually to arrange meetings. Another document Cabrera writes often is an application for IRB approval. The audience of this application is the Institutional Review Board of Rutgers, and the purpose of these applications is to get approval for research experiments that involve human subjects. A third, but certainly not final, example of the kinds of writing Cabrera produces frequently is published articles in medical journals. The audience of these articles is other scientists in the same field and the general public. The purpose of these articles is to convey the methods, results, and conclusions of scientific studies or experiments. Cabrera was able to provide me with a copy of an article he and his colleagues are working on currently, titled “An Enriched Approach to Combining High-Dimensional Genomic and Low-

Dimensional Phenotypic Data (Cabrera).” An excerpt from this article can be found in Appendix A.

Cabrera said the most challenging aspect of writing for him is trying to find the correct balance of detail. He explained that too much detail in a publication can cause readers to get bored and put down what they are reading. Similarly, too little detail can be boring as well and can easily cause readers to not finish the article, much less get through the introduction. Cabrera explained that he tries his best to counteract this issue by carefully considering the audience and trying to write in a way that is understandable to the general public. He also explained that the importance of skillful writing in his job depends on the specific document he writes. For example, when writing to the IRB, he said that the quality of writing is not that important, and it only matters if he can explain exactly what the experiment will entail. In contrast, when writing articles for publication, Cabrera said that the quality of writing is of utmost importance, sometimes even more important than the content of the study. He explained that the people who review the articles for publication will look for anything to discredit the author and reject the article.

When asked if he had any advice regarding writing and communication for people new to his career, Cabrera said it is kind of difficult to give one piece of advice that encompasses everyone. He went on to say that for some people, writing comes naturally to them as a gift and there is really no advice to be given. However, for people that struggle with writing, he advises them to stick to a strict set of rules that allow them to produce a very basic paper. Cabrera likened this to cooking: people who are naturally good at cooking do not necessarily need to look at a recipe, but for many people it is in their best interest to stick to the recipe exactly. The

naturally talented people may produce something more creative while the ungifted people create something that is more basic.

Research Psychologist

A research psychologist conducts experiments in many different fields of psychology, such as neuropsychology, abnormal psychology or developmental psychology. They often manage the entirety of the research process, including constructing a hypothesis, performing the experiments or surveys, and publishing the research findings. Writing is a very important aspect of research psychology because the key to advancing the field of psychology, or any other field of science, is communication between researchers in the same field as well as between the researcher and the general public. To learn more about writing as a research psychologist, I spoke with Stephen Kilianski, an instructor at Rutgers who has experience conducting research in psychology (Kilianski).

Kilianski explained that most of the writing he does as a research psychologist is papers that are either to be published or presented at conferences. He went on to say the audience of these papers is almost always other social psychologists, but they may also be read by the general public. The purpose of these papers is to, “present the findings of specific empirical research projects,” that he and his colleagues have conducted. These research projects usually involve theory-based hypothesis testing. Kilianski was able to provide me with a copy of one of his works, “Explaining Heterosexual Men’s Attitudes Toward Women and Gay Men: The Theory of Exclusively Masculine Identity (Kilianski).” The first page of this paper can be found in Appendix B. Another document he writes for work is an application for research grants. The

audience of such an application is whatever institution or organization that awards money to support research. The purpose of this document is to persuade a certain institution that the applicant is deserving of their support. A third document Kilianski writes is emails to colleagues. The purpose of these emails is to ask for or provide clarification on the details of whatever research project he and his colleague are collaborating on. The audience of these emails is the person(s) Kilianski is working with.

Kilianski explained the most challenging aspect of writing in his field is choosing an original topic and specific hypothesis. He went on to say writing the body of the paper is relatively easy for him, but it is difficult to make any headway on writing before laying out the hypothesis. Kilianski insists that writing is incredibly important for anyone who does research in academia. High quality writing is the key to getting published in prestigious journals and garnering grant money for research. Without these, it is impossible to move forward in the field. He also explained that getting a paper published requires almost impeccable writing because most reviewers will reject any paper that has poor quality writing. When asked to give advice about writing and communication to someone new in the field, Kilianski remarked, “quality science writing requires parsimony – saying what you need to very clearly with as little text as possible.” He went on to say that the best way to achieve this kind of writing is through practice with critical feedback. He also explained that the writing should not be in the same style as fiction or poetry, but at the same time it should not be dry and boring.

Statistics Professor

A statistics professor may teach a wide variety of subjects in the discipline of statistics, ranging from introductory statistics courses to advanced analytical processes, as well as computational methods and programming. For teachers of any subject, writing is incredibly important. Writing must be extremely clear for students to be able to understand what is expected of them. Writing that is unclear may cause confusion for students, parents, other teachers, and even administration. To learn more about the kinds of writing statistics professors produce, I spoke with Professor Surya Srinivasan, a statistics instructor at Rutgers (Srinivasan).

Srinivasan's job consists mainly of teaching undergraduate statistics courses. This includes setting up course syllabuses, which include course requirements and policies. This also includes scheduling exams, homework, and quizzes, as well as communicating with students, peers, teaching assistants and graders through email. Writing plays a relatively significant role in Srinivasan's work, seeing as she writes a lot of emails and exams.

The first major example of Srinivasan's writing is the course syllabus. The purpose of the syllabus is to clearly articulate the course expectations and requirements. This is important because students need to know what to expect from a course. The audience of the syllabus is mainly the students enrolled in the course, but can also include anyone interested in the course, as well as any administration who want to know more about the teacher's performance. A copy of one of Srinivasan's course syllabuses can be found in Appendix C (Srinivasan). Another example of documents she writes is emails to students. The purpose of these emails is often to clarify students' questions and concerns. The audience is students in the class. A third example of a document Srinivasan writes frequently is exams. The purpose of these exams is to measure

the students' level of understanding of the course material. The audience of these exams is the students currently enrolled in the class.

Srinivasan explained that the most challenging aspect of writing in her work is carefully choosing the right vocabulary to ensure the information is not misinterpreted. To counteract this difficulty, she makes sure to spend a thorough amount of time editing and proof reading her documents to make sure there will be no misunderstandings by the students. Srinivasan's advice regarding writing and communication in her field is to spend plenty of time in the editing phase. She emphasizes the importance of rereading a document several times before submitting it in order to catch any possible mistakes or writing that is unclear.

Hot Topic Supervisor

A supervisor at a distribution center manages a team of associates, trains associates, handles customer service issues, plans and assists with daily workflow to achieve maximum productivity, and creates an environment of teamwork, and open communication. In a large work setting such as this one, communication is incredibly important, both in person and through writing. In order to keep operations running smoothly and efficiently, supervisors must be able to communicate effectively to their fellow supervisors, managers, and associates they supervise. Written communication is especially important in a large setting such as this one, where in person communication is not always an option.

To learn more about writing as a supervisor, I spoke with Brandon Hanson, a supervisor at the Hot Topic distribution center in LaVergne, Tennessee (Hanson). He spends his time at work supervising a department of about 30 to 50 people. He supervises the replenishment

department of the distribution center, which spans the entire facility and includes many different jobs. He works to maintain a smooth work flow for the company. Writing allows Hanson to communicate to his associates, fellow supervisors, managers, and support team. Writing is important in allowing him to ensure that his department has what it needs to function properly. One of the documents he writes the most is emails. More specifically, the audience of these emails is management and the purpose is to communicate the performance and needs of his department, as well as any obstacles they are facing at the time. These emails allow for a quick reallocation of personnel to ensure proper workflow. Another document Hanson writes frequently is irregularity documents. These documents are intended for management, administration, and technical support. The purpose of these documents is to notify other departments of any irregularities he may find within the standard operating process. These documents also allow him to describe how to fix the problem, and often give him room to convince people of the need to fix the problem. He may need to spend some time outlining the benefits and risks to fixing the problem in order for others to get on board. An example of an irregularity document can be found in Appendix D (Hanson). A third document he writes frequently is standard operating processes. The audience of these documents is fellow associates, management, and fellow supervisors. The purpose of these documents is to provide associates a detailed description of how to perform every aspect of their job. These documents must be written in a way that is understandable to everyone, including those who do not speak English as their first language, and they must be detailed enough to ensure that all associates know how to perform in any given scenario. Hanson estimates that he spends roughly two hours per week writing and editing, although some weeks are significantly higher, depending on whether a big project is coming up.

Hanson explained that his biggest challenge in writing at work is learning his audience so that he can effectively communicate with them. To overcome these challenges, Hanson consults his colleagues for advice. He also tries the trial and error method, learning from his past mistakes as he goes along. Hanson explained that writing is very important to advancing in his field because his job performance is often judged by his writing. Simply put, showcasing excellent communication skills is a huge factor in whether he will get promoted.

Conclusion

This paper presents a multitude of writings in a varied array of professions. Some of these professions, such as the biostatistician and the research psychologist, share some major similarities in the types of writing as well as style of writing. As demonstrated, the biostatistician and the research psychologist write a lot of articles that publish the findings of their research. Both Javier Cabrera and Stephen Kilianski remarked that this kind of writing needs to be detailed yet precise (Cabrera; Kilianski). Across all four professions, we see that quality writing is key to advancing in the field or to ensuring the audience is well informed. For a supervisor, quality writing is a measure of job performance, and may seriously help or hurt one's chances of being promoted (Hanson). In the case of the statistics professor, it is evident that editing is a crucial phase of the writing process (Srinivasan). Overall, we see that quality workplace writing is crucial to success and takes time, practice, and attention to detail.

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An Enriched Approach to Combining High-dimensional Genomic and Low-Dimensional Phenotypic Data

September 16, 2018

Abstract

We describe an approach for combining and analyzing high dimensional genomic and low dimensional phenotypic data. The approach leverages a scheme of weights applied to the variables instead of observations and, hence, permits incorporation of the information provided by the low dimensional data source. This approach can be incorporated into commonly used downstream techniques, such as EIGENSTRAT, penalized regression. The approach is illustrated on a simulated lupus study involving genetic and clinical data.

Keywords: EIGENSTRAT, Enriched EIGENSTRAT, model selection, penalized regression, dimension reduction, precision medicine

1 Introduction

Precision medicine has presented a new and interesting analytical paradigm with the incorporation of genomic data into standard analysis of clinical data from patients for prognosis of diseases (Aramburu et al. (2015)). Genomic data are characterized by high dimensionality, involving millions of SNPs or tens of thousands of gene expressions, while clinical and demographics data are typically of low dimension, consisting of at most hundreds of variables. Consequently, the importance of clinical variables is overpowered by high dimensional genomic data when combining information from both data sources. To adequately capture crucial clinical information, it is important to ensure that these clinical features have a chance to be selected in the presence of high dimensional genomic data. Ensemble methods proposed in this manuscript have properties that can be used to model such situations (Yang et al. (2010)).

Amaratunga et al. (2007), Amaratunga et al. (2014) and Cabrera and Yu (2007) proposed a scheme that assigns weights to individual features based on the strength of the association among the features and the response. For instance, the weight may be calculated as a function of p -values, obtained from a suitable test criterion and corrected for multiplicity. A key principle underlying the approach is that the weights are applied to the variables, instead of the observations. The multiplicity correction is crucial to minimize the possibility of identifying spurious associations. Thus, if the association of the variable with the response is not by chance, the weight assigned to the variable would also be high. In this connection, because the information of the outcome is used in the determination of the weights, there may be potential for overfitting. This issue will be addressed below in our simulation experiments.

Amaratunga et al. (2014) also proposed the method of enriched Principal Component Analysis (ePCA) that uses the weights to calculate the principal components of high dimensional data. Earlier, Amaratunga et al. (2007) considered the application of an enriched method to unsupervised clustering.

As pointed out above, the primary purpose of combining genomic data and clinical data is both for identifying important SNPs and for predicting response. Due to the high dimensionality of the SNP data, it is often the case that clinical variables are not selected

Appendix B: Publication of Research Psychologist

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Psychology of Men & Masculinity
2003, Vol. 4, No. 1, 37–56

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Explaining Heterosexual Men's Attitudes Toward Women and Gay Men: The Theory of Exclusively Masculine Identity

Stephen E. Kilianski

Rutgers, The State University of New Jersey

How can heterosexual men's hostility toward women and gay men be explained? A new individual-difference variable, exclusively masculine identity, comprising a masculinized ideal self and feminized undesired self, was examined as a predictor of the psychological factor underlying heterosexual men's attitudes toward women and gay men. A complementary model explanation was supported, with exclusively masculine identity emerging as a significant predictor in addition to right-wing authoritarianism and social dominance orientation. However, this effect was accounted for solely by ideal self masculinization. Avenues for future research are suggested, and a more general version of the theory, exclusively in-group identity, is proposed as a potential mechanism underlying all intergroup attitudes.

"What kind of tackle is that, Remko? You're a pussy, a goddamn pussy! No, you're worse than that . . . you're a faggot, a goddamn fag!"

This vituperative, epithet-laden diatribe was directed toward a high school teammate of mine (only the name is fictitious) by our football coach several decades ago. It comes to mind as a dramatic example of a phenomenon well documented in social psychological research: the tendency for misogynistic and homonegative attitudes to co-occur. This particular instance is especially disturbing because this coach was, for many of my adolescent peers, a paragon of masculinity, the quintessential man's man, after whom many of my cohorts modeled their own personae.

The social psychological research literature is replete with examples of the relationship between traditionally restrictive or overtly negative attitudes toward women and prejudice toward gay men, particularly on the part of heterosexual men (e.g.,

Bierly, 1985; Ficarrotto, 1990; Harry, 1995; Herek, 1988; Morin & Garfinkle, 1978; Stevenson & Medler, 1995). What psychological mechanisms underlie this relationship?

The tendency for different forms of prejudice to co-occur has been long recognized by social psychologists (e.g., Adorno, Frenkel-Brunswick, Levinson, & Sanford, 1950; Allport, 1954; Tajfel, 1969). Numerous theories have been advanced to explain this phenomenon, among them the authoritarian personality (Adorno et al., 1950) and its latter-day counterpart, right-wing authoritarianism (Altemeyer, 1981), social dominance orientation (Pratto, Sidanius, Stallworth, & Malle, 1994), extrinsic religiosity (Allport & Kramer, 1946; Batson & Ventis, 1982), maximization of cognitive efficiency (Tajfel, 1969), and scapegoating due to frustration-aggression (Hovland & Sears, 1940; Miller & Bugelski, 1948).

With respect to the link between misogynistic and homonegative attitudes, an alternative possibility is that an aversion to femininity in the self underlies their tendency to co-occur. Psychoanalytic theory has traditionally viewed masculine gender identity as problematic and driven by unconscious fear of femininity in the self (e.g., Chodorow, 1974; Freud, 1905/1938; Horney, 1932; Sanford, 1966). Social psychologists have explored the demands of the male gender role and found that they tend to exclude anything that could be construed as feminine (e.g., Brannon, 1985; McCreary, 1994), leading to dichotomous constructions of masculinity and femininity (Maccoby, 1987; Spence, 1985, 1993; Spence

Portions of this research were presented at the annual meeting of the Eastern Psychological Association, Baltimore, Maryland, March 9, 2002. This article is based on research conducted in partial fulfillment of my doctoral dissertation requirement at Rutgers University under the supervision and guidance of Laurie Rudman (committee chair), Richard Ashmore, Dan Ogilvie, and Stephen Hansell.

Correspondence concerning this article should be addressed to Stephen E. Kilianski, Department of Psychology, Rutgers, The State University of New Jersey, 53 Avenue E, Kilmer Campus, Piscataway, New Jersey 08854-8040.

Appendix C: Statistics Professor's Syllabus

SYLLABUS

Intermediate Statistical Analysis / Basic Applied Statistics (960:384:01 and 960:484:01)

Instructor:	Surya Srinivasan
OFFICE:	CORE 309 (Busch Campus)
OFFICE HOURS:	T 3-4:30 P.M., F 12 TO 2 P.M.
E-MAIL:	ssriniv@stat.rutgers.edu
TA :	Name: Yiwei Shen Email: ys573@stat.rutgers.edu Office: Hill 551 Office Hours: MW 11:40 to 1:40 p.m.
CLASS WEBSITE:	sakai.rutgers.edu
MEETING TIMES:	T F 10:20 -11:40 a.m.
LOCATION:	SEC 208 Busch
TEXTBOOK:	Probability and Statistics for Engineering and the Sciences, 9 th Ed. J.L. Devore, (pub) Cengage.
ATTENDANCE:	Attendance is of <i>paramount</i> importance. The discipline of statistics is essentially a cumulative one, so catching up will be <i>very</i> difficult if you fall behind.
GRADING:	Your course grade will be determined by computing a weighted average of the following components (with their weights parenthesized): <ul style="list-style-type: none">▪ Mid-Term Exams (50%)▪ Final Exam (40%)▪ Computer Assignments (10%)
COURSE DESCRIPTION:	Applications of Statistical Techniques to the Analysis of data, tests of significance, Correlation and regression, Confidence Interval, ANOVA, Design of Experiments, Analysis of Cross-classified data, Chi-square tests. Course requires use of basic computer package, SAS.
MAKE-UP POLICY:	Make-up exams will only be given if written documentation of a major outside circumstance is provided by a college dean or a doctor. <i>Students who miss exams without presenting proper documentation in a timely manner will receive a grade of zero. Please note that there are absolutely no exceptions to this policy.</i>
ACADEMIC INTEGRITY:	The University has very strict rules concerning breaches of academic integrity. As such, any student caught cheating <i>will fail the course</i> and will likely be recommended for disciplinary action.
ASSIGNING GRADES:	First, your weighted average will be computed, as described before. If you appear to be on the borderline between two grades, I will look for trends of improvement to determine whether or not your grade should be higher. Attendance will also be taken into consideration. The thresholds for final letter grades will be re-scaled if a conventional standard seems unreasonable.

Appendix D: Supervisor's Irregularity Document

OVERVIEW

I would like to request we discontinue replenishment tasks which are split between TNDC and TNDC3. If done correctly, here is the typical way that these split tasks are completed:

1. The first driver to enter the task gets to pull the boxes from his/her building
 - a. The driver must remember to skip the boxes in the other building and NOT delete them from the task
 - b. Once the driver has completed pulling all of the boxes for that building, he/she must end the partially assembled task AND remember to systemically drop the product in a drop zone instead of leaving it in a partially assembled state
2. Once the original task is completed, the skipped boxes are automatically placed on a new task using the newest number in the task sequence. The task manager must remember to frequently check for this task to ensure it is assigned as it is available.
3. Assuming the first driver does not enter the new task, the driver from the other building can now enter the new task and pull the remaining boxes.

PROBLEMS

1. After one driver begins pulling from the split task, the other driver enters the task mid pull. The first driver is kicked out of the task and must return to the task manager. The task manager has to determine the best plan of action based on the current progress of the task.
2. The driver from one building accidentally deletes boxes from the other building instead of skipping them. The task manager must catch these by sifting through completed tasks and must request case pulls.
3. The driver from one building enters a task, but does not start it immediately. The other driver must wait patiently until the other driver completes the task, or the task manager must contact someone from the other building.
4. The driver from one building fails to drop the partial task properly, leaving it in a "Partially assembled" status. The task manager must constantly check this possibility. The manager can attempt to drop the task. If this is not possible, the manager must delete the task and request case pulls for the missing cases.

CONCERNS

1. The task manager wastes time following partial tasks to completion.
2. The task manager must assign tasks out of task order to avoid compromising wave order.
3. Time is lost because driver must return to the task manager 1-2 times before the task is resolved.
4. Replenishment is slowed due by time needed to resolve these problems.
5. Tasks are assigned which cannot be completed properly as it is not possible for one driver to pull boxes from two separate buildings.

Appendix E: Email Requesting Interview

Professor Cabrera,

My name is Sarah Abu-Shanab, and I am a student in your Computational & Graphical Statistics class. I have an assignment for a technical writing class that requires me to interview someone that has/had a career that I aspire to achieve. I was wondering if we could sit down sometime within the next week to discuss your work with research and biostatistics. I would like to talk about the kinds of writing you would do for your work. Here are some topics we may discuss:

1. Describe your job. What do you do?
2. Describe the role writing plays in your work routine.
3. Describe three specific documents you create on a regular basis and the audiences and purposes of these documents.
4. Provide, if possible, copies of or links to example documents you can share.
5. What percentage of your time in any given week would you estimate you spend on writing and editing tasks?
6. What is most challenging about writing for you? How do you handle these challenges?
7. How important is writing in your field? Does it matter how well you write? Why?
8. What advice would you give about writing and communication to someone new to your career?

I am available Monday through Wednesday before 12, as well as all day Friday. If these times do not work, I am also willing to work around your schedule, if possible. Please let me know if you are available for an interview, and if so, when we could meet.

Thank you so much for your consideration,

Sarah Abu-Shanab

Appendix F: Formal Thank You Letter for Interview

Javier Cabrera
471 Hill Center
Rutgers University
Piscataway, NJ 08854
September 26, 2018

Sarah Abu-Shanab
1104 Thomas Suites
Rutgers University
Piscataway, NJ 08854

Professor Cabrera,

I wanted to take the time to thank you for your help with my writing assignment. I appreciate you taking time out of your busy schedule to sit down with me for an interview.

The information you provided me with was very helpful and made it easy to write my report. I enjoyed getting to hear about your work and background. I was especially impressed to hear that you had worked with John Tukey. I hope you enjoyed getting to discuss it with me.

Once again, thank you so much for your help. I really appreciate it.

Sincerely,

A handwritten signature in black ink, appearing to read 'Sarah Abu-Shanab', written in a cursive style.

Sarah Abu-Shanab