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The Engineers' Guide to Technical Writing: Insights for Budding Engineers

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ABSTRACT

Engineers, being hands-on experts, need to produce technical documents that are convincing to colleagues, executives, and clients. This study analyzes different technical documents written by engineers and offers instruction on how to approach the task of technical writing. The quantitative part of the study involved gathering statistics on the types of documents most frequently written by engineers and the importance engineers assign to technical writing in their career. The study participants consisted of 60 engineers selected through a snowball sampling method. Data was collected through the use of a questionnaire. The results of the data are presented in frequencies and percentages. An analysis of the data reveals that engineers currently practicing in Saudi Arabia believe writing to be important in their field. In total, 66.7% believe writing to be "very important," whereas the remaining 33.3% believe it to be "important"; none of the respondents believe writing to be only "slightly important" or "not important." When asked whether their background education in the engineering field adequately prepared them for writing on the job, only 30 (50%) were confident of their writing abilities following their engineering degrees. The other 30 (50%), although they found their skills in technical writing to be useful, were not confident of its adequacy in the workplace. Given the option of selecting more than one answer, respondents recorded the following frequencies for the type of writing they usually do at work: 40 out of 60 respondents (6.7%) stated that they frequently write interim or progress reports; 30 (50%) stated that they write final or recommendation reports. However, only 10 (16.7%) of the respondents revealed that they often write more focused reports, such laboratory reports. Engineers also write a fair number of non-report documents, including memos, emails, and logbook entries.

INTRODUCTION

Globalization has introduced the imperative of adopting a common tool of effective communication that can be used across the world without any ambiguity or misperception. In response to this need, numerous countries, including Saudi Arabia, have adopted English as a foreign language (EFL) for the purpose of operational interaction. Practicing engineers are very clear about the importance to their productiveness in the engineering industry of developing a comprehensive understanding of the English language. Every profession has its own form of specialized writing. Inasmuch as they are hands-on experts, engineers need to develop documents that are clear and convincing not only to their colleagues, but to clients as well. Technical documents written by engineers need to communicate with their audiences. As a result, it is important to consider the audience when planning, writing, and reviewing a technical document.

It is important to keep in mind that a technical document is different from a general document, especially as regards its objectives and its audience. Many engineering students are not interested in taking courses in academic or technical writing; they find the task too cumbersome and too detail-specific. While many engineering students focus on their main subjects, which are technical in nature, they fail to give much time to language studies because they deem it less important. Hence, they fail to improve their writing. Admittedly, writing can be difficult for engineering students, and the strict nature of technical writing makes it a daunting task. However, the ability to communicate ideas effectively in a document is not just an added advantage but a necessity. In addition to studying English, it is imperative that engineers study the essential structure of technical documents if they are to succeed in technical writing. Practicing engineers have revealed how important the knowledge of technical writing is to their careers (Abed and Ibrahim, 2017).

Purpose of the Study

A large number of studies exist on teaching technical writing to engineering students. This study takes a theoretical approach, in that it analyzes the different kinds of technical document used in the engineering field as a preparation for interpreting the responses of practicing engineers to a questionnaire about technical writing in the workplace. The theoretical framework of the study presents useful insights on how to tackle the task of technical writing and provides

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tips for budding engineers as well as teachers. Further, the study collates the opinion of engineers practicing in Saudi Arabia concerning writing in the engineering field. Overall, the study seeks to answer the following research questions:

1. How important is technical writing in the field of engineering?
2. What kinds of technical documents do engineers write at work?
3. Does an engineering degree adequately prepare engineers for writing in their career?
4. What advice can practicing engineers give to budding engineers on writing in the engineering field?

THEORETICAL FRAMEWORK

The Audience for Technical Engineering Documents

Ignoring the audience could well be the biggest communication mistake an engineer can make, as different types of documents are intended for different readers. To communicate effectively, an engineer must know the audience well in terms of their knowledge of the field and relationship to the business concern as well as their purpose in reading the content.

Clients: When writing for clients, engineers are essentially writing as engineering consultants. Documents written for clients need to exhibit perfect clarity, as they usually present a solution to a particular problem. As a result, phrases such as *"maybe this can help"* and *"this sounds like a great idea"* should be avoided. Clients look for statements that convey certainty, with some level of guarantee. It is in order to achieve such certainty that they seek out an engineering consultant in the first place. Clients hire engineering consultants to analyze situations and present solutions to specific problems; they expect to be able to make decisions based on the engineer's recommendations (Carlowicz, 2005). Engineers can improve their writing greatly by keeping the level of the audience in mind and making sure that they understand the text well.

Executive or Government Officials: When writing technical documents for submission to government officials or other executives, engineers need to present solid evidence that the team has investigated the problem in question (Budinski, 2001). It is important that the document presents a recommendation in a clear format. Executives make business, economic, administrative, legal, governmental, and political decisions based on the technical write-up presented (Budinski, 2001); executive policies may be made based on these recommendations. The document must reflect the team's ability to achieve the stated objectives. Should it relate to a new product or scheme, the audience (executives) will decide whether or not to approve it. Many engineering students hold the misconception that a complex and scholarly text is a good example of technical writing when, in fact, the opposite is true. A technical document has to take this fact into consideration. An executive may have little or no technical knowledge. Therefore, attempts should be made to avoid engineering buzzwords, and technical terms should be translated into the simplest possible language.

Colleagues: A solution or technical intervention is generally designed in collaboration with a colleague or a team of colleagues. Engineers have a great deal of technical knowledge about the topic under discussion (for example, a solution that has been devised), and they are familiar with industry terminology. Still, a well-organized document goes a long way in lending clarity to the topic being discussed.

When reading a technical document, the reader wants absolute certainty that the writer has knowledge of the topic under consideration. A technical document should aim to achieve the following goals:

- **Demonstrate familiarity with the problem**: To create credibility, the document needs to present a clear view of the problem in question form. This will help convince readers that the engineer-author understands the problem and will help them gain a better understanding of the problem themselves. Only when the problem is understood can a solution be proposed. A project's preexisting conditions should be discussed from all relevant viewpoints. Here is an instance of a problem description, offered by the researcher:

  > *The houses in Laban Valley have existed for more than two centuries. However, the rate of collapse of houses in that region in recent times has been a cause of worry: four houses collapsed due to heavy downpour and flash floods in 2017; a further ten houses caught fire on the afternoon of 4 September 2018 because of being close together. Houses built in that era tend to be close by ...*

  As demonstrated in this example, the document should first discuss and analyze the problem; only then can the reader perceive a solution. The discussion of the problem establishes the expertise and competence of the engineer.
- **Solution:** The engineering field is steeped in mathematics. It is important to display results alongside statistics and simple mathematical expressions, adjusting the level of complexity to the audience of the document (Caponi et al., 2018). Solutions should not be merely explained. Without statistics and data to fall back on, a reader (e.g. an executive or official) is less likely to adopt the solution proposed or formulate executive policies based on it. Moreover, colleagues will not trust an engineering intervention with no mathematical support.

Organizing a Technical Document

Organization is crucial when writing a technical document (Bush & Campbell, 1995; Tănase, 2017), and a table of contents is key to organizing the information. It is unlikely that a technical report will be read from cover to cover in a linear manner; the majority of readers need to get to the point quickly. A table of contents directs them to the exact pages they want to read.

It is important to understand who the audience is and to structure the document accordingly. Determining in advance how much knowledge or expertise the readers are likely to have is an important step in writing a targeted document. If certain categories of readers do not have background knowledge in the engineer-author's field, it is the duty of the

technical report to explain that background clearly to make the content comprehensible. Engineers should realize that a universal template created for technical documents may not be appropriate for all categories of audiences. In this case, different sections can be dedicated to different types of audiences, depending on the level of technicality. If, however, a particular category of audience is the most important reader, the engineer is expected to write for that audience. For example, a technical document written mostly for executive purposes should consider executives to be its audience.

Finally, the unnecessary repetition of facts should be avoided. Superfluous information that adds no real value should be deleted. A precise and accurate document is better than a bulky document with little real information.

Reports

Reports constitute the most important type of documents written by engineers (Lutz & Hering, 2010), and they are written more frequently than any other type of document. The following sub-sections present some of the types of reports written by engineers as well as their requirements.

Depending on the purpose and the target audience, a report can be

- very formal (like a report on a board meeting),
- semi-formal (like reports relating to routine activities), or
- less formal (like reports to the existing clients).

Initial report

An initial report gives a description of how a project will be approached. As with any plan, it involves a dose of intelligent and informed guesswork. It is written before a project is commenced and includes a clear statement on how it will be carried out. It is written for the purposes of the engineering firm itself and is the result of collaboration among the various units expected to work on the project (Laplante, 2013). An initial report also takes into account the preliminary discussion with the client.

The basic format for an initial report is as follows:

Executive Summary
Objectives
Initial Analysis of the Problem
Preliminary Literature
Scope of Work
Schedule of Tasks
Allocation of Responsibilities

Design report

A design report, being an internal report, is read by fellow engineers, technicians, and experts working on a project. An engineering solution cannot be communicated by graphics alone; it needs to be accompanied by comprehensive documentation. A detailed analysis is required, using specific terms related to the particular field of engineering that the report covers. The problem-solving design is fully explained in the following format (Silyn-Roberts, 2013).

Format

- **Summary:** The summary gives a description of what is expected in the document. It outlines the problem and how the team of engineers expects to solve it.
- **Development of the Model:** Development of the model presents the constraints encountered during the development of a solution for a project. It gives insights into the solutions that were considered and why; it also briefly discusses those that were rejected. For a design that is routine, the development of the model is straightforward, and few details are required—in other words, a short design model documentation is appropriate.
- **Design Calculation:** Design calculations give reviewers a chance to refer to drawings and mathematical equations mentioned in the section on the development of the model. A design calculation is incorporated into the body of a design report.

Interim report

Progress or interim reports are an essential part of the engineering intervention. An interim progress report documents the schedule and success of an ongoing project. The goal is to present the progress made on a project to managers, clients, executives, and/or colleagues and assess what still remains to be done (Vesilind, 2007). Engineers must bear in mind that clients sometimes projects that fall behind schedule. Yet it is also important to acknowledge that any project of significant size might encounter unexpected obstacles resulting from additional requirements, miscommunication, unanticipated delays, and so on. A progress report must account for all of these factors. Interim reports are written periodically, so more than one progress report will be written for a given project.

A simple structure for a progress report is as follows (Beer & McMurrey, 2013):

Introduction
Work Completed
Work Scheduled
Problems

A detailed interim report could include the following headings:

- **Introduction**
  - **Project Description**
  - **Project Summary**
- **Work Completed**
- **Work Scheduled**
- **Problems**
  - **Problems Encountered**
  - **Changes in Requirements**
- **Overall Assessment of the Project**

Recommendation report

A recommendation report gives a detailed description of the project to be carried out, detailing the tasks that various teams will undertake. The culmination of long hours of study and professional effort, this type of report focuses on the recommendations for a proposed project.

A recommendation report is most likely to be read by senior executives in an organization. It should start with a general overview before going into the details of the operation to be carried out, and it should be written in such a way that executives with no technical knowledge can understand the executive summary and identify the basic content quickly and accurately. The executive summary also offers readers a concise outline of all crucially important information, helping them evaluate the information in the remainder of the document (Silyn-Roberts, 2012). Quantitative data that are of note should have a different heading for reference purposes.

A typical recommendation report includes the following sections:

Executive Summary
Introduction
Discussion
Conclusion
Project Deliverables
Recommendations

Forensic engineering report

A forensic report is not a routine engineering report. Rather, it is a technical document that bridges engineering and law (Lewis, 2003). As Lewis (2003) recommends, care must be taken in writing forensic reports as legal decisions may be based on them. The aim of a forensic report, which is most likely to be used in litigation, is to put forth a defense concerning a technical failure. The audience (e.g., judges, jury members, arbitrators) is not expected to have technical knowledge of the engineering field; therefore, the conclusion of such a document must be easily understandable. In addition, the argument must be intelligible because serious consequences might follow otherwise. Some technical terms will inevitably be included in the document, but the focus should be on presenting a persuasive argument to the readers. Information should be presented in such a way that the reader is able to form an opinion based on facts logically presented.

A forensic report differentiates direct observation from assumptions or third-party information and distinguishes facts from professional opinion. It contains only those facts that, from a professional point of view, support the defense put forth in the document (Marmo & Fiorentini, 2015). Marmo and Fiorentini (2015) argue that users will benefit from a forensic report only if it uses the correct terms and definitions and aids understanding of the topic of contention. The use of jargon should be avoided as much as possible, but if technical terminology is necessary, then it should be defined or illustrated in simple terms. All information should be specific and accurate. If information can be better represented visually, it is best to use illustrations. A common format used for a forensic report is as follows:

Title
Purpose
Background Information
Description of the Case
Findings and Observation
Analysis
Conclusion

Numbers, figures, tables, equations, and graphical illustrations

A technical engineering document is centered on data (Silyn-Roberts, 2012). Every engineering report must have an appendix section, which contains a list of equations, tables, figures, and graphical illustrations referred to in the main document. All of these must be referenced appropriately (Silyn-Roberts, 2012). It is necessary to define all mathematical symbols except those that are in general usage and easily recognizable by laypersons. The derivation of equations, numerical methods, and error analysis should be included. Computer programs used should also be referenced in the document. It is prudent to ensure that all technical, scientific, and mathematical measurements are accurate. The units of measurement should always be included. When introducing drawings or graphical representations, it is best to ensure that they are clear and relevant. It is also important to include captions that clearly describe what each drawing, image, or graphic represents. Graphical illustrations may include line drawings of process schematics, flow diagrams, and organizational charts. It is important to include supplemental details, such as a directional compass, scale information, or related notes, as required. The software currently preferred in the industry for the preparation of high-quality technical information is Adobe Illustrator; AutoCAD is useful for drawings that must be precise and to scale.

Letter of transmittal

A letter of transmittal, directed to the client organization or the executive in charge of a project, makes the delivery of a technical engineering report official. In the case of the submission of a final report, it serves as a delivery note (Longo & Kmiec, 2017). A letter of transmittal must contain the following:

- the title of the report;
- the project or reference number, if applicable;
- an official statement of submission, including submission date;
- a brief explanation regarding why the report was written (that is, who assigned it, when, and why);
- one to three sentences stating the main theme of the report;
- a brief note on any particular section of the report that may be of interest to the recipient; and
- an indication of subsequent actions expected to be carried out by the recipient.

Laboratory report

A laboratory-based experiment requires a report to demonstrate that the engineer understands the procedure he or she has carried out (Budinski, 2001). The laboratory report details the significance of the outcome

of the experiment. Engineering laboratory reports have an established format:

Headings	Content
Title	Precisely reflects the focus of the laboratory
Abstract	Provides an overview of the report content
Aim	Concisely states the objectives of the experiment
Procedure	Describes the equipment and materials used in the experiment as well as the procedures carried out
Results and Discussion	Contains tables of raw data and detailed calculations; presents and interprets the results
Conclusion	Summarizes findings and offers recommendations

Non-report Writing

Engineers are required write a variety of documents other than reports. These range from emails and logbook entries to memos. The types of non-report writing frequently done by engineers are addressed in this section.

Memorandum

Memorandums (memos) are being replaced by emails. However, the style and tone of professional emails remain the same as in a traditional memo. Memos differ from notes. As the ability to write an effective memo is a necessary skill in the industry, it is well worth taking the time to develop it. A memo has a simple basic format:

TO:
FROM:
DATE:
ABOUT:

Although memos are written for circulation internally within an organization, they should still be written with attention to detail (Mazumder, 2016). Longer memos may include a summary before the body of the main information. Engineers use reports and memos to communicate with both management and colleagues.

Informal notes and engineering logbooks

An engineering logbook is a professional reference for a project or several projects. McAlphine et al. (2006) argue that, although the information in a logbook is recorded for the engineer's own purposes and is not reviewed by a superior or client, it is still important to organize the information effectively because of its value. As a project progresses, an engineer has to store information in the logbook informally. using industry buzzwords. The logbook, if kept properly, prepares the engineer to write a full-fledged report when the time comes. Industry standards dictate that each daily entry should begin on a new page. The engineer is expected not to delete erroneous entries but rather to mark a line through them so that no information is lost. The outcomes of meetings, brainstormed ideas, graphics, formulas, and equations can all be entered into the logbook. As Cash et al. (2007) report, a review of project performance adds reliable information that can come into use when the final report is being drafted. Many technical write-ups depend on the information stored in the logbook. In it, the engineer is free to use industry terminology, which will be translated into simple terms in more formal reports intended for non-technical readers. The format of an engineer's logbook should ensure easy access to information in the future. The following percentages are suggested for an effective logbook entry:

Entry	Percentage
Project learning and development	70
Review of an ongoing or completed project	10
Meetings, lecture notes, and planning	20

Email

Like most professionals, engineers must communicate via email, and the information conveyed in emails is shared among colleagues and beyond. To ensure that emails are read, engineers should implement the following recommendations (Abed & Ibrahim, 2017):

- Ensure that the subject line stands out; the subject line should clearly define the purpose of the email.
- Write the email to a person, that is, use simple lay terms to provide the reader with useful information and avoid the overuse of industry jargon.
- Always include a request (that is, include information on the follow-up process the engineer expects the reader to carry out).
- Proofread the writing. Documents containing grammatical errors are easy to misinterpret, and mistakes can lead to misinformation in addition to undermining the writer's credibility. For these reasons, engineers should never write emails in a hurry.

Additional email-related ethics:

- It is courteous to send a copy of the email to anyone whose name appears in the body of the message.
- Confidential documents must not be sent by email. The content of this may be leaked to unintended individuals.
- Email threads can get lengthy as replies pile up. It is better to start a new email thread than reply to an already lengthy one.

Instructions for Teachers of Technical Writing

The first step in learning to write is reading. In order to write well, engineering students must have a clear idea of the style of writing required of them. Lecturers in ESP can assist students by bringing into the classroom real-life examples of technical documents (reports, memos, work emails, and so on), which can be read through with students and discussed. Additionally, engineering students, as a way of developing their writing skills, can write practice reports, memos, emails for work-related scenarios, and other technical documents.

In teaching technical writing, the concept of brainstorming should not be omitted. As technical writers, students need to plan their write-ups in advance and flesh out their ideas before they begin writing. Brainstorming their ideas, in addition to reading other technical documents beforehand, gives students the greatest chance of success. It is important to encourage engineering students to develop the habit of

reading, as they often struggle to express their ideas due to their lack of vocabulary. This can be a major setback for engineering students (Vesilind, 2007).

METHODOLOGY

A questionnaire consisting of open-ended and closed-ended questions was used as the data collection instrument. The questionnaire was distributed among engineers practicing in Saudi Arabia in order to gather information related to technical writing. The study participants included 60 engineers who were selected through a snowball sampling method. The data collected were analyzed through descriptive statistics using SPSS v. 20. The responses of the participants formed the basis for the qualitative analysis and provided useful insights that can be applied in teaching technical writing to engineering students. The questionnaire contained questions about writing in the engineering field as it is perceived by practicing engineers. The questions inquired about the relevance of writing in the field of engineering, asking how frequently engineers are required to write reports and whether they feel their undergraduate education to be relevant to the technical writing tasks they perform in their careers. Finally, practicing engineers in Saudi Arabia were invited to give recommendations to current engineering students.

FINDINGS

The data below presents statistics and useful insights regarding the views of engineers on writing in the engineering field. The recommendations offered by practicing engineers are also included in detail because of their potential importance to budding engineers.

Importance of Technical Writing in the Engineering Field

The data relating to the importance of writing in the engineering field demonstrates that engineers believe technical writing to be an important component of their discipline (Table 1). The highest percentage of respondents (66.7%; n = 40) indicated that technical writing is "very important" in the engineering field. A smaller percentage, 33.3% (n = 20), defined it as "important." None of the respondents selected the "not important" or "slightly important" options. This confirms the importance of technical writing for engineers. Engineering students should take a cue from this data and attach more importance to technical writing (Vesilind, 2007). The present globalized workplace creates a competitive scenario in which an enhanced focus on English communication is required in order for engineers to succeed. Dealing with numbers is an integral part of engineering, as is collating technical documents, and it is common to come across engineering students who have good knowledge of these subjects. However, many students require extra support when it comes to communicating their ideas. In the case of technical documents, this support is especially important, since these documents require particular structures and adhere to specific rules. Table 1 present the statistics on the importance engineers attach to technical writing.

Kinds of Technical Documents Written by Engineers

When asked about the kinds of writing engineers do at work, respondents revealed that they write a fair number of report and non-report documents. Given the choice of selecting more than one option, respondents recorded the following frequencies for the types of writing they usually do at work: 40 out of 60 respondents (67%) reported that they frequently write interim or progress reports; 30 (50%) reported that they write final or recommendation reports. However, only 10 respondents (16.7%) stated that they often write more focused reports, such as laboratory reports. Engineers also write a fair number of non-report documents. Invited in this item to select more than one option, 30 (50%) of the engineers disclosed that they enter a fair amount of information in their logbooks; 30 (50%) said they write memos which are circulated among co-workers; 20 (33.3%) affirmed that writing emails is a common task in an engineering career. Tables 2 and 3 below detail the kinds of writing done by engineers.

Adequacy of an Engineering Degree in Preparing Students for Technical Writing

Answering the important question about whether their undergraduate education had prepared them for writing in the engineering field (Figure 1), 30 (50%) of the respondents believed that their background education in engineering had adequately prepared them for writing in the field of engineering (5 – extremely useful). Ten (16.67%) of the respondents believed that their background education in engineering

Table 1. Importance of Writing in the Engineering Field (N=60)

Response	n (%)
Not important	0 (0)
Slightly important	0 (0)
Moderately important	0 (0)
Important	20 (33.3)
Very important	40 (66.7)

Table 2. Report Writinga Done by Engineers

Type of report	n (%)
Initial report	40 (66.67)
Final/Recommendation report	30 (50)
Interim/Progress report	20 (33.3)
Laboratory report	10 (16.7)

a. N=60; more than one answer was possible.

Table 3. Non-report Writinga Done by Engineers

Type of Writing	n (%)
Emails	20 (33.3)
Memos	30 (50)
Logbook entries	30 (50)

a. N=60; more than one answer was possible

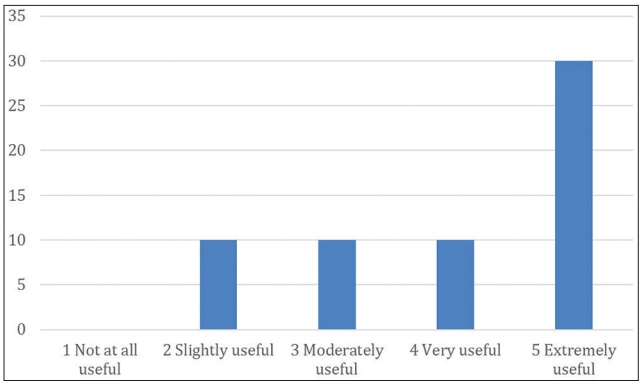

Figure 1. Adequacy of an engineering degree in preparing students for technical writing

was "very useful." Further, 10 (16.67%) believed that their background education had prepared them only "moderately" well for writing in their engineering career. The remaining 10 (16.67%) believed that their background education had been only slightly useful in terms of writing in their career. These numbers suggest that there is room for improvement in the instruction of engineers in the skills of technical writing. Figure 1, below, shows perceptions among engineers of the adequacy of an engineering degree in preparing students for technical writing in the engineering field.

These results are similar to the findings of Devira (2017) in a study, conducted in Adelaide, Australia, of students' expectations and perceptions pre- and post-commencement of an engineering communication course. According to Devira, students expected to learn *"how to write a report effectively, use the correct articles and relevant vocabularies, and pick up information that we can use in relation to engineering issues*" (p. 38). However, upon completion of the course, they commented that *"we don't do this much, and I haven't learned how to approach the technical terms, so maybe I will gain, but it's not much like I expected. It's just how to write an essay, the structure of an essay"* (p. 39). Students' expectations were high upon commencement of the engineering communication course. However, they did not feel that they had mastered the desired skills upon the completion of the course. Engineering students should be taught technical writing skills that are relevant to what will be expected of them at their jobs (Devira, 2017).

Advice offered by Practicing Engineers to Budding Engineers

Regarding of how they felt about the adequacy of their training, respondents in the study offered the following advice to engineering students:

- Writing is a key to becoming successful engineers.
- They should dismiss the thought that engineers do not need much writing.
- Engineering students who write should keep it up; writing often will help them overcome barriers to writing, which is a requisite for the engineering profession.
- The students must be original with their ideas because it will propel their focus.
- Engineers must be good writers. Possessing writing skills in the engineering field improves the chances of success in a global setting.
- Writing in engineering is quite different from other types of writing.
- Engineering write-ups have established guidelines that must be satisfied before they can be considered relevant.

These responses are similar to those of the engineers interviewed by Bill Doe of Colorado University (Doe et al., 2016). Advising young engineers, Doe and his colleagues suggested developing a broad array of soft skills, particularly writing. English language communication, with an emphasis on writing, is a prerequisite in a multidisciplinary field such as engineering.

CONCLUSION

Technical writing is a necessity in the engineering field, as engineers need to convey technical ideas in a structured manner. This study presents basic and detailed information on the structure and content of technical writing for engineers. The quantitative aspect of the study presents information on the types of documents written by practicing engineers. Many engineers are expected to write reports, which range from initial reports at the commencement of a project to final reports at its conclusion. Other writings required of engineers include memos, emails, and logbook entries. Collating the opinions of engineers reveals that many practicing engineers believe that writing cannot be overemphasized in the engineering profession. Engineers believe technical writing skills to be very important to the success of their career. Many engineers continually brush up their skills in technical writing. The results of the questionnaire given to engineers in the present study reveal that half of the respondents believe that their background education adequately prepared them for writing in an engineering career. Still, there are others who feel that although their background education in technical writing has been useful, it could be further improved. Overall, practicing engineers want budding engineers to dispel the idea that writing is not important in the engineering profession. It is common to come across science, technology, engineering, and mathematics (STEM) students who are advanced in their fields of study but could use extra support in the skills of written communication. Writing is the Achilles heel of most engineers, and many good ideas never see the light of day because engineers are unable to communicate them. For engineers to advance beyond crunching numbers, they need to communicate effectively, including developing proficiency in writing. The present paper proposes a helpful and practical guideline for potential engineers, advising them to improve their language skills as regards writing for specific purposes appropriate to their intended field, so that by mastering this form of communication they may become successful engineers.

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