

Technical Writing

Introduction

It has become a need nowadays that professionals like doctors, engineers, scientists, and technocrats require not only technical expertise in their respective but also good writing skills. It is an art to explain technical subjects to both technical and non-technical audiences. Technical writing like this is a subset of formal communication and requires in-depth subject knowledge. Its significance lies in the fact that it presents highly technical information to the audience in a very comprehensible form. The challenge lies in presenting that work in accurate and precise form, letting not the scope for misinterpretation which would defeat the very purpose of technical writing.

Importance: It includes manuals, online help, instructions, reports, proposals, and various forms of letters, resume, etc. in which one's writing knowledge is exposed and added as an advantage besides technical knowledge. Technical writing skills are required for the following purposes:

- To present information comprehensively
- To present information in the appropriate format
- To organize details with conciseness and appropriateness
- To use jargons sparingly and after an audience analysis
- To showcase the industry and organization's achievements in the desired light
- To accurately record the activities of an organization

Characteristics: The main purpose of technical writing is to present the process, methods and ideas in the most suitable and understandable format for the target audience. Hence, the following qualities are essential in order to reach the highness in writing:

1. Clarity:

- (i) Concepts and ideas should be clear to self
- (ii) Clarity of language is needed to deliver the content to the reader.
- (iii) Understand the concept from audience's perspective
- (iv) Unequivocal and straightforward words must be used

2. Accuracy :

- (i) Slightest variation from the standard may lead to the loss of message
- (ii) Exact representation of facts and figures should be done
- (iii) Content should be presented in appropriate format that is acceptable by the target audience

- (iv) Inaccuracy may lead to loss of significance

3. Correctness:

- (i) Accuracy will lead to correctness
- (ii) Content should be organized into proper headings and sub-headings
- (iii) Audience should not be left to search for details
- (iv) Should check whether the interpretations are greatly altered

4. Descriptive:

- (i) Does not refer to details and the length of the document
- (ii) It refers to how much of each aspect has been covered
- (iii) Language need not be flowery but must be thoughtful
- (iv) It should help give purpose and description to the image it is trying to create in readers' mind

Language –

1. It is an important tool of putting thoughts into reality
2. Choice of words reflects clarity
3. To think and to give form to the object we need words
4. For technical writing denotative words have to be chosen
5. They are objective in nature and are interpreted in one way without any emotional overtones
6. Technical writings' purpose is to express and not impress so words which reflect clarity and have direct meaning must be chosen

Appropriateness:

It refers to catering to audiences' needs as well as the purpose. It should be simple and comprehensible to reach the readers' expectation. Inappropriate language can damage one's credibility, undermine one's argument, or alienate one's audience. Using appropriate language involves taking care of the following aspects:

- Using suitable level of language formality
- Avoiding deceitful language and euphemisms
- Avoiding slang
- Using apt idiomatic expressions
- Using group-specific jargon
- Avoiding biased/stereotypical language

Acceptability:

It is mainly related to the content. It is more applicable to legal policies and rules and regulations. The preparation of these documents is time consuming as it involves a lot of sensitive issues and requires a cautious and precise use of words. It may also require the writer to understand the perspective of people belonging to different social and economic strata. In most cases, interacting with the targeted audience will help design the content of the document as per their requirements.

Conciseness and Flow – A good command over language will help write in a clear and concise manner. It is suggested that a sentence should contain no unnecessary words and a paragraph should have no unnecessary sentences. Every word of either a sentence or a paragraph should tell something to the reader. Some guidelines for writing concise text are as follows:

1. Remove redundancy: saying same thing twice must be avoided.
2. Reduce clauses to phrases and phrases to words to be precise
3. Avoid using unnecessary words like ‘really’, ‘very’, ‘quite’, ‘extremely’ etc
4. Edit out phrases that can be omitted
5. Avoid Euphemism (an indirect word or phrase that people often use to refer to something embarrassing or unpleasant)

To achieve and maintain flow in writing following steps can be taken:

1. Make sentence relationship apparent
2. Use cohesive devices/ connectives such as ‘moreover’, ‘however’ etc. to join the sentences
3. Interlink the sentence with proper ideas
4. Arrange the sentences in logical order
5. Develop the thoughts consistently

Note: Reading the above with relevant examples in page 319 and 320 is suggestable.

Impersonal and Formal Language-

1. Technical writing is a formal communication therefore individual opinions, personal beliefs, emotions, biases, allegations and prejudices must be avoided.
2. The topic must be approached objectively
3. The document should reflect the principles and values of the organization
4. Language used should reflect impersonal opinions
5. First and second person usage must be avoided

6. The tone of the writing should be instructional and very objective
7. Judgmental and emotive words like 'I believe', 'I Disagree' and 'repulsive'; 'undignified' should be avoided

Informal writing:

1. Informal writing has casual sentences with lot of slangs and colloquia expression
2. Figurative emotional language can be used
3. Connotative words used in informal writing make it more subjective

Formal writing:

1. They follow rules of grammar
2. They avoid sexist language, clichés, and slangs
3. Tone of formal writing is also form
4. It is supported by clarity of thoughts
5. They generally follow a format
6. They adhere to certain conventions

Bias-Free and Plan -writing

1. Technical writer should be free of all biases while writing
2. Stereotype words are prohibited
3. It should be nondiscriminatory in all aspects
4. Gender bias-sexes words that discriminate women from men and reflect the dominance of male in our male dominated society must be avoided
5. Age bias-sensitivity to the age ill help avoiding words like elderly, brat, juvenile and delinquent which have negative connotation
6. Disability bias-a writer must be sensitive to people who have physical, mental or sensory impairment. Instead of using words like handicapped, retarded, and crippled should be replaced by more caring words like 'physically challenged', 'special child', etc....
7. Racial and Ethnic Bias – stereotyping people based on their race or their nationality should be avoided. For example, Indians are for mental jobs, Americans are always superior, Italians are most handsome, and etc. the best solution is not to refer to people according to the race or nationality.

Elements of Style: For technical writing, good knowledge needs to be backed up by an equally good writing style. It is not only the content but also the style of presentation that makes up good writing. Each individual has a unique style of writing. However, some features of style are common to all good writers. They are:

1. Clarity of thoughts –

- (a) It important to understand the subject clearly before writing
- (b) It will help convey the subject without ambiguity
- (c) It can be achieved by providing specific details
- (d) Active voice should be used rather than passive voice
- (e) Avoid acronyms, jargons and difficult words
- (f) Precise, concrete and familiar words should be used
- (g) Effective sentences and paragraphs should be constructed

2. Audience's perspective and level of understanding must be gauged

- (a) According to the target audience. Choice of words and description can be made to make it interesting and comprehensible by them

3. Economy of words –

- (a) Selecting the word that best suits the context
- (b) Avoiding wordiness
- (c) Appropriate length of sentence and paragraphs must be judged to make the piece an effective mode of communication
- (d) Economy of words will make the text more understandable and appealing
- (e) It will enhance readers' interest and involvement.

4. Spelling -

- (a) Typographical errors must be strictly avoided
- (b) Incorrect spelling conveys a poor impression of the writer as a communicator
- (c) It may also distort the message the message
- (d) It may convey wrong meaning or
- (e) It may convey no meaning at all

Guidelines to avoid errors in Spelling:

1. A dictionary is the most useful tool for checking and improving spelling
2. Write regularly and re-check the words that you tend to misspell
3. Spelling can be improved through reading.
4. Reading helps improve vocabulary as well

5. Use Mnemonics a set of words that help remember how to do something

5. Adaptability – it is essential to analyze the intelligence, education and maturity level of the audience to adapt to our communication.

6. Sentence Variety –

- (a) The sentences should be crafted carefully to produce the text that is easily understandable
- (b) Too much information should not be suffocated in a sentence – it makes reading difficult
- (c) The wrong arrangements of words in a sentence may lead to ambiguity – so positioning of the words is of utmost importance
- (d) Writing must reflect the thoughts one intends to communicate
- (e) Conscious effort must be made to change the word order in the sentence to be more accurate and express exactly the intended thought.

Note: Reading the above with relevant examples in page 322 - 324 is suggestable.

Techniques for Good Technical Writing

The following are the various techniques used by technical writers to be effective.

Overcoming Writers' Block:

1. It is a psychological condition
2. If left unattended to the condition may affect the thinking ability of the writer and curb the creative ability.
3. Personal issues, criticism from peers or excessive work pressure may cause this condition
4. The writers' enthusiasm to write falls drastically if this condition prevails.

Preventive measures:

1. Think positive
2. Write for your pleasure
3. Overlook criticism
4. Change your place of work, in case the cause seems to be the old workplace but may not actually be so
5. Do not sit at the writing table very long
6. Take short breaks in between
7. Avoid distractions that waste a lot of time
8. Drink a beverage to refresh yourself
9. Read some other material not related to your writing
10. Meet the deadlines but be not harsh on yourself

11. Try to inject humor into difficult situations
12. Concentrate while working
13. Avoid excessive stress.

Adding Emphasis in Writing:

1. Emphasis can be laid by changing the order of words in the sentence or by changing the voice of the sentence.
2. A wrong positioning of words can change the meaning of the sentence completely or result in ambiguity.

Accentuating the Positives

1. It is important to balance the positive and the negative factors while conveying any message.
2. It is writer's responsibility to accentuate the positivity of the message.
3. A sentence with positive tone becomes emphatic and conveys more information than a sentence with a negative tone.
4. Positive sentences are motivating to read.
5. Place the positives first and then the aspects to be improved.
6. Positive words create goodwill among the people and they become more focused on the goal
7. A right frame of mind can be created in the reader by the use of positive words
8. Negative words tend to create resistance in doing the job.

Prioritizing for Effective Writing:

1. Focus should be on both writing effectively and efficiently.
2. To write efficiently the writer needs to organize his ideas and plan
3. To be able to organize the ideas the writer should:
 - (a) Comprehend the subject clearly
 - (b) Understand the purpose of writing
 - (c) Identify the requirements of the target audience.
 - (d) Select suitable words and phrases to effectively communicate the message.

Note: Reading the above with relevant examples in page 326 and 327 is suggestable.

Avoiding Plagiarism:

1. Plagiarism is copying another person's ideas, words, or work and pretending that they are your own.

2. It is intellectually dishonest and highly unprofessional act.
3. It is sometimes done due to ignorance.
4. Plagiarism is a punishable offense.
5. Citing direct quotes and acknowledging all the sources referred to should be done by the writer.
6. Plagiarism and copyright are closely related.

Referencing and Styling

1. To avoid violation of copyrights and plagiarism complete details of the source must be mentioned.
2. The textual citations guide the reader to complete source in the reference list provided.
3. The style guide or the style manual specifies the standard guidelines for writing the document.
4. The manual specifies the details regarding how the various parts of a document such as journal article will be styled.
5. Style guides are common for general and specialized use, for the general reading and writing audience, and for students and scholars of various academic disciplines, medicine, journalism, law, government, business and industry.

RIGHT WORDS AND PHRASES:

Using the right words in the right context is one of the essential elements of effective writing. The following guidelines will help achieve clarity and economy in writing:

- Prefer simple, familiar words to abstract and general words.
- Prefer concrete and specific words to abstract and general words.
- Use acronyms carefully.
- Avoid clichés.
- Avoid expressive use of jargon.
- Avoid foreign words and phrases.
- Avoid redundancy and circumlocution.
- Avoid discriminatory writing.

USE FAMILIAR WORDS:

- An important element in the use of words is the selection of familiar words----- words that are commonly used in daily language.
- A rule of thumb is to avoid stiff and difficult words as far as possible.
- For example, use the word ***destroy*** instead of using ***annihilate***; use ***verify*** instead of using ***corroborate***, and use ***outdated*** instead of ***antiquated***.

- Many writers fall into the trap of using high-sounding, pompous words in an attempt to make the work more impressive. Such writing confuses the readers.
- The rapid pace of work life today demands that writing be informal in tone, brief, precise, and easy to grasp.
- There is no formula for the appropriate selection of words.
- The writer must keep the target readers in mind and cater to the lowest common denominator of this group.
- The key is to use words suited to the intelligence level of the reader.
- Style does not consist in displaying the width of our vocabulary, but in how successfully we communicate the meaning to the reader.
- The following examples show how sentences can be simplified using familiar expressions:
 - Example: 1. Original: Antiquated machinery was utilized for experimentation.
 - Revised: Old machinery was used for the test.
 - Example: 2. Original: Company operations for the preceding accounting period terminated with substantial deficit.
 - Revised: The Company lost much money last year.

USE CONCRETE AND SPECIFIC WORDS:

- Concrete words stand for things that exist in the real world such as chair, desk, automobile, flowers, the Taj Mahal, and so on.
- Abstract words, on the other hand, cover broad meanings such as concepts, ideas, and feelings.
- Concrete and specific words are always preferable to abstract words.
- Concrete words are forceful, direct, and to the point.
- Abstract words are general and vague, and digress from the point.
- Good business communication is marked by words that have clear meanings.
- Instead of saying 'The Company suffered a tremendous loss in the second quarter of last year', directly say 'The Company suffered a 70 per cent loss in profits in the second quarter of last year.'
- Give special emphasis to sentence structure and construction in order to avoid ambiguity.
- It is essential to be clear and precise in the choice of words.
- Sometimes a sentence is correct in grammatical construction but can be interpreted in number of ways. This is called Structural ambiguity.
- Ambiguity can result from the choice of words which may have multiple meanings. This is called Lexical ambiguity.
- Some commonly used ambiguous words and phrases a writer should avoid are bimonthly, quite a few, tenement, quite a bit, table a proposal, slim chance, fairly well.

USE ACRONYMS AND ABBREVIATIONS SPARINGLY:

- An acronym is a word formed by combining the first letters of the words that make up the name of something.
- For example, WHO is the acronym for World Health Organization.
- Some other examples such as FBI (Federal Bureau of Investigation), POTA (Prevention of Terrorism Act), IAF (Indian Air Force) and IBM (International Business Machines).
- Acronyms help achieve brevity and are necessary in technical documents.
- Do not use acronyms relating to technical fields when communicating with individuals unfamiliar with the subject.
- Many acronyms are familiar to the layperson and can be freely used. For example, RADAR, IIT, AIDS.
- Restrict the number of acronyms in individual sentences.
- Acronyms are extensively used in email and sms communication. It is acceptable as part of informal communication, but should be strictly avoided in official mails.
- Abbreviations on the other hand are short forms of words, such as ‘St for ‘saint’, ‘av’ for ‘average’, etc.
- Do not use phonic abbreviations like ‘u’ (for you) and ‘tho’ (for though) in formal or semi-formal writing.
- Do not abbreviate words at the beginning of sentences.
- Do not abbreviate proper nouns.

AVOID CLICHES:

- Clichés are overused words and phrases that have lost their appeal.
- Nobody likes to hear stale, one-fashionable phrases that add little or no meaning to what we say.
- However, there may be instances where a cliché convey the idea so effectively that it becomes extremely difficult to improve upon it or think of a substitute.
- Example 1.
 Original: The report discusses threadbare the problem of air pollution in time.
 Revised: The report discusses the problem of air pollution in India in detail.
- Example 2.
 Original: The engineers left no stones unturned to construct the bridge in time
 Revised: The engineers worked very hard to construct the bridge in time.

AVOID EXCESSIVE USE OF JARGONS:

- Jargon is defined as words or expressions that are used by a particular profession or group of people, and are difficult for others to understand.
- Every profession has its specific jargon.
- Doctors communicate with each other in medical terms that are seldom understood by the layperson.

- The use of jargon is acceptable as long as the communication takes place among individuals belonging to the same field or profession.

Technical Jargon	Familiar expressions
Accrued interest	Unpaid insurance
Annual premium	Annual payment
Assessed valuation	Value of property for tax
Charge to your principal	Increase balance of your loan
Conveying title	Signing and recording a deed
Mach-2	Twice the speed of sound
Catalysis	Accelerated decomposition or re-composition of a substance.

AVOID FOREIGN WORDS AND PHRASES:

- Like, jargon, some writers indulge in the use of foreign words and phrases.
- It makes little sense to use words such as *Vide supra* or *raison d'être* in place of better understood English equivalents such as 'see above' and 'the justification for', respectively.

AVOID REDUNDANCY AND CIRCUMLOCUTION:

- We need to avoid the use of unnecessary words or resort to needless repetition of an idea. This makes the writing redundant.
- Redundancy is the part of a message that can be eliminated without loss of much information.
- Once unnecessary words are pruned, the idea stands out clearly and effectively.
- Some superfluous words are basic fundamentals, return back, adequately enough, resume again, the month of May, few in number, detailed perusal, true fact, new innovations, future prospects, and so on.

AVOID DISCRIMINATORY WRITING:

- It is wrong on a writer's part to alienate a section of the masses through the usage of politically incorrect words.
- All too prevalent are gender-biased words, words that differentiate people based on their gender.
- A sentence such as use of masculine pronouns – he, his, and him – create a sexist image.
- A sentence such as 'A student in BITS does his homework well before coming to class'. shows gender bias, considering the fact that BITS is a co-educational institute.

SENTENCES

- The ability to construct effective sentences adds value to technical documents such as emails, letters, memos, reports, proposals, etc.
- If sentences are ineffective- choppy, loose, ambiguous and awkward – they fail to create the impact one intends to make on the readers.
- A sentence is a group of words that expresses a single, complete thought. While the basic units of a sentence are subject and predicate, the larger units that make up a sentence are main clauses, subordinate clauses, and phrases.

SALIENT POINTS OF SENTENCE CONSTRUCTION:

- Short Sentence:
 - Simplicity in writing can be achieved mainly by writing short sentences.
 - Shorter sentences convey meaning better than longer ones.
 - If too many ideas are stuffed into a sentence through words, the meaning is lost and the reader is left confused.
 - When long sentences are required to convey a complex message, construct them meticulously so that clarity is achieved.
- Break the sentence:
 - When a sentence is loaded with a lot of information, it becomes very difficult to understand the meaning.
 - It is very difficult to break a sentence only when the ideas are very closely knit.
 - A sentence can be split into two or three shorter sentences to bring in clarity.
- Economy with words:
 - A sentence can be shortened by being economical with words.
 - One idea can be expressed in a number of ways; one way can be shorter than the other.
 - Usually, a briefly worded sentence saves the time of the reader apart from being clearer and more interesting.
- Avoid cluttering phrases:
 - Sentences often become long because of cluttering phrases.
 - One can replace these phrases with shorter wording, without loss of meaning.
- Avoid pleonasm or redundant phrases:
 - Avoid using excess words that do not contribute any meaning to the sentence.
 - Sometimes the sentence will have to be reconstructed after eliminating the extra phrases.
- Avoid circuitous expressions:
 - While it is possible to write a sentence in a number of ways, some ways are more direct than others.
- Avoid needless repetition:

- Repetition of a word or idea unnecessarily lengthens the sentence, without adding to the meaning.
- Most of the time, it serves no purpose at all as can be observed in this sentence.